Progression in Computing

Curriculum Drivers: Well-being, Diversity & Inclusion, Real-life experiences, Oracy, Vocabulary Development						
Early Years	*In early years children explore technology through a variety of ways. Children have regular access to touch screen devices to practice gross and fine motor control in drawing, writing and creative arts. We have invested in a variety of remote controlled and hand-held devices include remote controlled cars, metal detectors, iPads and walkie talkies. Using these resources support children in the EYFS to develop their understanding of how technology works and that working with technology requires thought and forward planning. Children in the EYFS also have experiences of using the programmable floor robots 'Bee-Bots'. The children learn basic programming skills as they navigate the direction of the robots with support from adults.*					
Cultural Capital (visitors, trips, competitions, experiences)	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
	Walk in the community to experience and find different forms of technology. Use of Beebots, iPads to explore coding. Home learning projects regularly feature digital media PSHE links (online safety, peer pressure, bullying, support networks, fake news, social media)	Blocks of Wonder – maths links with shape and measure. Let's get moving – links with DT puppet making. What's Cooking? links with DT and Literacy. Skills upgrade links with literacy editing. Feel the beat links with music. Link to science museum Power Up Lab trip. Home learning projects feature a range of computing opportunities.	On-line safety, (including cyber bullying) links with PSHE Home learning projects regularly feature digital media Geography link with website unit of work (our first website about volcanoes) Literacy and oracy links with Morden meets audible unit of work	Home learning tasks link to power points, sketch up and research Trip to Science Museum online activities (Power Up and This is Me) PSHE links to online safety, bullying and age-appropriate sites for children to access. Trailers project on iPads links to Whole Class Reading (class novels)	Encryption factor teaches the use of encryption through history – wartime. Stop, think, share uses discussion about bullying (inc. racial) An example of young people discussing pro/cons of social media is used from young girls from an Africa. Hey DJ uses the opening to the Lion King as inspiration for our movie soundtrack compositions on the iPads, exploring the savannah plains of East Africa. Traditional instruments are explored to match the setting. Kodu first steps features some discussion on virtual worlds representing different environments	Digital literacy links with editing Online safety regular feature of all research activities across the curriculum Home learning projects regularly feature digital media PSHE links (online safety, peer pressure, bullying, support networks, fake news, social media) Trip to science museum: interactive computer-based technician gallery

| | | | | from different cultures – landscapes etc. | | |

SUBSTANTIVE KNOWLEDGE

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Topics and key vocabulary	**My First Steps** login, username, password, safety **A splash of colour** draw, save, open, edit **What in the world** technology, function, effect, reason **Robot programmers** program, movement, debug, solve **Data sorters** order, group, data, **Blocks of Wonder 1** algorithm, move, looks, debug	**Skills Upgrade** typing, open, save, edit, find **Blocks of wonder 2** sensing, click, interact, effect, debug **Let's get Moving** animation, frame, photo, timeline **Tell a story** image, text, font, save, open **Feel the beat** beat, tempo, instrument, **Robot programmers 2** program, algorithm, debug, solve, puzzle	**My First Webpage** WYSIWYG, test, save format, **What's cooking** recipe, order, film, specific **Morden Meets Audible** audio, microphone, level, sound **Blocks of wonder 3** variable, loop, debug, broadcast **Data sorters 2** cell, graph, spreadsheet, filter **LAN WAN Thinking** network, LAN, WAN, IP address	**Movie Trailer** frame, shot, position, timeline **Blocks of wonder 4** input, output, store, debug **Healthy Living** research, healthy living, offline activities **3D Sculpture Design** design, dimensions, scale **Micro:bit Mini Computer** upload, code, input, output **Hello World** programming language, run, debug	**My Second Webpage** HTML, TAG, CSS, browser **Feel the Beat 2** tempo, composition, mood **Making a Movie** scene, import, timeline, cut **The Encryption Factor** encryption, cipher, coded messages **Kodu first steps** 3D, terrain, object, program **Stop Think Share** social media, future consequences, instant communication	**Kodu Next Steps** object, terrain, program, path **Let's go on holiday** search, cell, formula, compare **Streaming Dreaming PT1** screen record, timeline, export **Streaming Dreaming PT2** screen record, timeline, Export **Micro:bit Mini Computer** upload, code, input, output **My Own Project** Plan, delegate, upload, send/receive

DISCIPLINARY KNOWLEDGE

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Computer Science	Programming floor robots. Programming similar onscreen robots. Using logical thinking to predict the outcome of algorithms. Beginning to use logical thinking for debugging. Introducing block coding. Introduce the theory of sorting data through physical items	Developing block coding introducing sensing and interaction blocks. Predicting outcome of algorithms and being able to explain why. Using algorithms to create on screen animation. Working collaboratively to program floor robots.	Developing understanding of how a network works. Using variables and loops within block coding. Working collaboratively to suggest algorithm improvements. Working collaboratively on debugging being able to break the issue in to smaller issues to solve. Using cooking recipes to demonstrate algorithms in use outside of programming. Using a web browser to check work and development tools for debugging.	Using variables to store user input. Using conditional operators for processing data. Starting to look at commenting/labelling code to help others understand. Introducing loops/repeating algorithms. Developing Booleans (if/else statements) using user input. Exploring a selection of computing languages like PHP, Python and JavaScript.	Introducing encryption and how computers protect data. Looking at historic code ciphers (Morse code, Cesar cipher). Starting to look at personal security and password creation. Using 3D game engine to start designing and developing simple programs. Using sequence and repetition to help digitally compose music. Introducing HTML and CSS elements to be used when creating a webpage.	Design and develop a program within a 3D environment. Developing computer-controlled objects to interact with the user. Design difficulty levels within a program to challenge the user. Using previous knowledge in variables to apply within other applications. Peer reviewing programs and deciding what feedback to use and implement into the program. Using a spreadsheet to organise data. Using formulas to complete mathematical equations.

Information Technology	Using a variety of online applications to create digital art. Recognising technology outside of school. Being able to describe what particular technologies are used for and how they affect our lives. Using login information to access various activities and resources.	Developing fine motor control with mouse. Developing typing skills using touch typing application. Importing and manipulating images. Working with text – font styles, size, colour. Using digital music creation app to create music.	Recording and editing audio using Audacity or other suitable software. Using spreadsheet applications to enter and sort data. Using software to create graphical representations of data. Introducing popular spreadsheet formulas. Creating a way of harvesting data from peers – e.g. Google Forms.	Using templates to create videographer content. Using CAD software to create sculptures and 3D art. Understanding the differences between local and cloud storage. Using the internet to research a topic Identifying reputable websites through comparison.	Creating an informative presentation including referenced verified text. Using a variety of devices to record, upload and download video footage. Using editing software to edit video footage. Using digital aids to compose and create original music. Further developing blogs to include information about individuals in a safe and informative way.	Creating presentations to share best practice with a variety of age ranges. Researching and verifying information with peers before publication. Using screen capture software record and then add audio to create instructional material.
Digital Literacy	Introducing online safety concepts such as telling an adult if they need help or if something happens while using a device. Introducing children to logins and why they must be kept safe. Children begin to identify their "personal information" and understand keeping that private.	Discussions around playing games online and how to stay safe. Identifying "responsible adults" when reporting online events. Being able to comment of peer work in a positive and constructive manner "I like this because…" "I would improve it by doing…".	Learning ethical practices when harvesting data. Developing knowledge of personal data and what can be shared safely. Starting to organise files and folders to effectively find and retrieve work. Using the cloud to store documents	Using "" to create specific searches for enhanced safety and narrowing of results. Secure knowledge of what should be shared when assigning a name to shared work online. Developing commenting on peers work in a written format. "This is great work because…" "I like (this), have you	Understanding passwords and what makes a good one. Displaying confident and secure knowledge of how to share safely online keeping all relevant information private. Consistently displaying calm and respectful etiquette while using online services.	Looking at influencers and how they conceal personal information while still sharing with their audience. Understanding that consent to use images is essential. Thinking about future security and how online activity now can have both positive and adverse effects on later life.

	Saving, opening and editing common file types.	Developing more independence in saving and opening work. Using file names to identify saved work.		thought about adding (this)". Saving and retrieving from cloud storage. Using folder creation within the cloud.	Exporting files for compatibility and sharing. Using folder creation and sub-folders to organise multiple file types.	Displaying effective and safe search strategies to find and ingest information online. Search through network archives to identify previous learning and copy this for personal use. Organise and display images, video and audio.