Curriculum:

Progression in Computing

INTENT – The Computing Curriculum

We understand that giving children a secure understanding of the computing curriculum, including e-safety, will be paramount to their success in later life as technology continues to advance and become a larger part of everyone's life. We strive for our children to leave our school as digitally literate citizens with an excellent understanding of computer science and information technology. They will also be aware of how to use technology safely as part of their everyday lives.

Our whole curriculum is shaped by our school vision which aims to enable all children, regardless of background, ability, additional needs, to flourish to become the very best version of themselves they can possibly be. We teach the National Curriculum, supported by a clear skills and knowledge progression. This ensures that skills and knowledge are built on year by year and sequenced appropriately to maximise learning for all children. Although 'technology' is no longer a stand-alone part of the EYFS curriculum we are committed to ensuring technology is available within provision and to contributing to children's understanding of e-safety from the earliest age.

Through our curriculum we aim to inspire a lifelong love of play, design, code and invention with technology.

IMPLEMENTATION - Progression in Computing

Progression in Online Safety (Linked to Knowlsley SOW)

Digital Literacy – Online Safety	EYFS	Year 1	Year 2/3 (A)	Year 2/3 (B)	Year 4/5 (A)	Year 4/5 (B)	Year 6
	The children learn: the Internet can be used to communicate with others. simple online safety rules. people create online content such as video and websites.	The children learn: how to access and search the web. to identify people they can trust and who they can ask for help when using the internet. to send a digital message. how they should behave and interact with others in the online world. why it is very important not to over share, share things that are personal or may hurt other people. the ways that some people can be unkind online. about following sensible online rules. safe behaviours in their day to day world such as not talking to or meeting strangers and how this applies in the online world. what a username and password is and that they must keep them private.	The children learn: about safe and unsuitable sites/apps. e.g. PEGI rating. to talk to a trusted adult before sharing personal information online and using strong passwords. that the characters and people they interact with may be computer generated / including games. the differences between the Internet and the physical world. sending a message and why it is important to communicate in a polite manner. that login details and passwords should only be shared with trusted adults. that copyright is something that prevents people stealing other people's work (content). what personal information is and that they need to talk	The children learn: the SMART rules about using the internet safely and responsibly. what personal information is and what they shouldn't be sharing. they should pause before posting and consider the potential consequences. who they should seek help from about online concerns. the correct and sensible choice when presented with hypothetical scenarios. how to send and reply to online messages, such as email, respectfully and understand the difference between online and face-toface. how to use the safety features of websites as well as reporting concerns to an adult they trust. what online bullying/ cyberbullying is and	The children learn: the potential risks and ways they can protect themselves and friends from harm online. the safety features of websites and apps. e.g. block or report. they should report concerns to a trusted adult. the Internet is a great place to develop rewarding relationships. not to reveal private information to a person they know only online. that friends/followers profiles may not reflect the truth about their real lives. the term 'digital footprint' and that the information they put online leaves a digital footprint or "trail" which can be positive and negative. to search for their own name and usernames in Google to test their digital footprint.	The children learn: to demonstrate and explain the importance of communicating kindly and respectfully. about the negative online behaviours such as bullying, trolling, griefing and harassment. about empathy and the effects of online bullying. anything they post online can be seen, reshared, re-used and may have a negative effect on others. about the 'Digital 5 a Day' plan and that they need to have a balanced approach to their use of technology. what makes a secure username and password. why people set up fake accounts or copy others identities.	The children learn: the advice they should/would give friends about making good choices online. the consequences of making poor online choices. E.g. Online bullying, Inappropriate comments (racially or sexually orientated), uploading inappropriate material (adult / illegal / antisocial), accessing inappropriate sites (anti-social or illegal behaviour / adult content) and breaching copyright laws. the way men and women can be stereotyped in movies and TV. when to seek help from a trusted adult and not to try and deal with online situations on their own. how to block and report inappropriate

		that online content such as video, images, websites and games are created and shared by people. that to use other peoples work without asking or giving credit is wrong.	to a trusted adult before sharing online. how some information may be inaccurate or untrue. to independently use a search engine, navigate a website, use favourites, bookmarks or typing the URL. that you can be connected to many	some of the forms it can take. how to report any concerns and who they consider a trusted adult. they need to have a balanced approach to their use of technology. to make good choices about how long they spend online.	how they should act appropriately & respectfully online. how to deal with online bullying. how photos can be altered digitally and the creative upsides of photo alteration, as well as its power to	what an online identity or internet persona is, e.g. social identity in online communities and websites (Facebook, Instagram, YouTube etc) including photos and posts. how to avoid being tricked by scammers online. E.g. Phishing emails. The child can explain why an app may be free but have in-apppurchasing and what that is.	comments or behaviour online. how to maintain healthy positive relationships with others while online. behaviours and strategies to prevent and stop online bullying. The child knows and can list the websites and agencies they can

IMPLEMENTATION - Progression in Computing

Progression in Online Safety (Linked to Teach Computing SOW)

	Autumn 1 Online Safety	Autumn 2 Creating Media	Spring 1 Programming	Spring 2 Programming	Summer 1 Computer Systems & Networks	Summer 2 Creating Media / Data & Information
Year 1	See above (Progression in E-Safety)	Use a computer to create and format text before comparing to writing non-digitally.	Write short algorithms and programmes for floor robots and predict programme outcomes.	Design and program movement of a character on screen to tell stories.	Recognise technology in school and use it responsibly.	Choose appropriate tools in a programme to create art and make comparisons with working non-digitally.
Year 2/3 (A)		Begin to develop touch typing skills and correct finger placement to enable efficient typing skills.	Create and debug programmes and use logical reasoning to make prediction.	Create sequences in a block-based programming language to make music.	Identify IT and how it's responsible use improves our world in school and beyond.	Collect data in tally charts and use attributes to organise and present data on a computer.
Year 2/3 (B)		Begin to develop touch typing skills and correct finger placement to enable efficient typing skills.	Design algorithms and programmes that use events to trigger sequences of code.	Write algorithms and programmes that use a range of events that trigger sequences of action.	Identify that digital devices have inputs, processes and outputs and how devices can be connected to make networks.	Capture and change digital photographs for different purposes.
Year 4/5 (A)		Create documents by modifying texts, images and page layouts for a specified purpose.	Use a text-based programming language to explore count control loops when drawing shapes.	Explore conditions and selection using a programmable microcontroller.	Recognise the internet as a network of networks including the www and why we should evaluate online content	Capture and edit digital still images to produce a stop frame animation that tells a story.
Year 4/5 (B)		Create documents by modifying texts, images and page layouts for a specified purpose.	Use a block-based programming language to explore count controlled and infinite loops when creating a game.	Explore selection in programming to design and code an interactive game	Recognise IT systems in the world and how some can enable searching on the internet	Plan, capture and edit video to produce a short film.
Year 6		Select, use and combine a variety of software to create and present data and information.	Explore variables when designing and coding a game.	Design and code a project that captures inputs from a physical device.	Explore how data is transferred by working collaboratively online.	Answer questions by using spreadsheets to organise and calculate data.

IMPLEMENTATION - Progression in Computing (Vocabulary)

Year 1		
Computing systems and networks - Technology around us	**Creating media - Digital painting**	**Creating media - Digital writing**
technology, computer, mouse, trackpad, keyboard, screen, double-click, typing.	paint program, tool, paintbrush, erase, fill, undo, shape tools, line tool, fill tool, undo tool, colour, brush style, brush size, pictures, painting, computers	word processor, keyboard, keys, letters, type, numbers, space, backspace, text cursor, capital letters, toolbar, bold, italic, underline, mouse, select, font, undo, redo, format, compare, typing, writing.
Data and information – Grouping	**Programming A - Moving a robot**	**Programming B – Programming animations**
object, label, group, search, image, property, colour, size, shape, value, data set, more, less, most, fewest, least, the same	Bee-Bot, forwards, backwards, turn, clear, go, commands, instructions, directions, left, right, route, plan, algorithm, program.	ScratchJr, command, sprite, compare, programming, area, block, joining, start, run, program, background, delete, reset, algorithm, predict, effect, change, value, instructions, design.

Year 2		
Computing systems and networks - Information technology around us	**Creating media - Digital music**	**Creating media - Digital photography**
Information technology (IT), computer, barcode, scanner/scan	music, quiet, loud, feelings, emotions, pattern, rhythm, pulse, pitch, tempo, rhythm, notes, create, emotion, beat, instrument, open, edit.	device, camera, photograph, capture, image, digital, landscape, portrait, framing, subject, compose, light sources, flash, focus, background, editing, filter, format, framing, lighting,
Data and information – Pictograms	**Programming A - Robot algorithms**	**Programming B - Programming quizzes**
more than, less than, most, least, common, popular, organise, data, object, tally chart, votes, total, pictogram, enter, data, compare, objects, count, explain, attribute, group, same, different, conclusion, block diagram, sharing	instruction, sequence, clear, unambiguous, algorithm, program, order, prediction, artwork, design, route, mat, debugging, decomposition	sequence, command, program, run, start, outcome, predict, blocks, design, actions, sprite, project, modify, change, algorithm, build, match, compare, debug, features, evaluate, decomposition, code.

Year 3		
Computing systems and networks – Connecting computers	**Creating Media – Desktop publishing**	**Creating Media – Stop-frame animation**
digital device, input, process, output, program, digital, non-digital, connection, network, switch, server, wireless access point, cables, sockets	text, images, advantages, disadvantages, communicate, font, style, landscape, portrait, orientation, placeholder, template, layout, content, desktop publishing, copy, paste, purpose, benefits.	animation, flip book, stop-frame, frame, sequence, image, photograph, setting, character, events, onion skinning, consistency, evaluation, delete, media, import, transition.
Data and Information – Branching databases	**Programming A – Sequencing sounds**	**Programming B – Events and actions in programs**
attribute, value, questions, table, objects, branching, database, objects, equal, even, separate, structure, compare, order, organise, selecting, information, decision tree.	Scratch, programming, blocks, commands, code, sprite, costume, stage, backdrop, motion, turn, point in direction, go to, glide, sequence, event, task, design, run the code, order, note, chord, algorithm, bug, debug, code.	motion, event, sprite, algorithm, logic, move, resize, extension block, pen up, set up, pen, design, action, debugging, errors, setup, code, test, debug, actions.

Year 4		
Computing systems and networks – Connecting computers – The internet	**Creating Media – Audio production**	**Creating Media – Photo editing**
internet, network, router, security, switch, server, wireless access point (WAP), website, web page, web address, routing, web browser, World Wide Web, content, links, files, use, download, sharing, ownership, permission, information, accurate, honest, content, adverts	audio, microphone, speaker, headphones, input device, output device, sound, podcast, edit, trim, align, layer, import, record, playback, selection, load, save, export, MP3, evaluate, feedback.	image, edit, digital, crop, rotate, undo, save, adjustments, effects, colours, hue, saturation, sepia, vignette, image, retouch, clone, select, combine, made up, real, composite, cut, copy, paste, alter, background, foreground, zoom, undo, font.
Data and Information – Data logging	**Programming A – Repetition in shapes**	**Programming B – Repetition in games**
data, table, layout, input device, sensor, logger, logging, data point, interval, analyse, dataset, import, export, logged, collection, review, conclusion.	Logo (programming environment), program, turtle, commands, code snippet, algorithm, design, debug, pattern, repeat, repetition, count-controlled loop, value, trace, decompose, procedure.	Scratch, programming, sprite, blocks, code, loop, repeat, value, infinite loop, count-controlled loop, costume, repetition, forever, animate, event block, duplicate, modify, design, algorithm, debug, refine, evaluate.

Year 5		
Computing systems and networks – systems and searching	**Creating Media – Introduction to vector graphics**	**Creating Media – Video production**
system, connection, digital, input, process, storage, output, search, search engine, refine, index, bot, ordering, links, algorithm, search engine optimisation (SEO), web crawler, content creator, selection, ranking.	vector, drawing tools, object, toolbar, vector drawing, move, resize, colour, rotate, duplicate/copy, zoom, select, align, modify, layers, order, copy, paste, group, ungroup, reuse, reflection	video, audio, camera, talking head, panning, close up, video camera, microphone, lens, mid-range, long shot, moving subject, side by side, angle (high, low, normal), static, zoom, pan, tilt, storyboard, filming, review, import, split, trim, clip, edit, reshoot, delete, reorder, export, evaluate, share.
Data and Information – Flat-file databases	**Programming A – Selection in physical computing**	**Programming B – Making Quizzes**
database, data, information, record, field, sort, order, group, search, value, criteria, graph, chart, axis, compare, filter, presentation.	microcontroller, USB, components, connection, infinite loop, output component, motor, repetition, count-controlled loop, Crumble controller, switch, LED, Sparkle, crocodile clips, connect, battery box, program, condition, Input, output, selection, action, debug, circuit, power, cell, buzzer	Selection, condition, true, false, count-controlled loop, outcomes, conditional statement, algorithm, program, debug, question, answer, task, design, input, implement, test, run, setup, operator

Year 6		
Computing systems and networks – Communication and collaboration	**Creating media – Webpage creation**	**Creating Media 3D Modelling**
communication, protocol, data, address, Internet Protocol (IP), Domain Name Server (DNS), packet, header, data payload, chat, explore, slide deck, reuse, remix, collaboration, internet, public, private, one-way, two-way, one-to-one, one-to-many.	website, web page, browser, media, Hypertext Markup Language (HTML), logo, layout, header, media, purpose, copyright, fair use, home page, preview, evaluate, device, Google Sites, breadcrumb trail, navigation, hyperlink, subpage, evaluate, implication, external link, embed.	TinkerCAD, 2D, 3D, shapes, select, move, perspective, view, handles, resize, lift, lower, recolour, rotate, duplicate, group, cylinder, cube, cuboid, sphere, cone, prism, pyramid, placeholder, hollow, choose, combine, construct, evaluate, modify.
Data and Information – Introduction to spreadsheets	**Programming – Variables in games**	**Programming – Sensing movement**
data, collecting, table, structure, spreadsheet, cell, cell reference, data item, format, formula, calculation, spreadsheet, input, output, operation, range, duplicate, sigma, propose, question, data set, organised, chart, evaluate, results, sum, comparison, software, tools.	variable, change, name, value, set, design, event, algorithm, code, task, artwork, program, project, code, test, debug, improve, evaluate, share, assign, declare	Micro:bit, MakeCode, input, process, output, flashing, USB, trace, selection, condition, if then else, variable, random, sensing, accelerometer, value, compass, direction, navigation, design, task, algorithm, step counter, plan, create, code, test, debug.

IMPLEMENTATION – LONG-TERM PLAN

YEAR A	Y1	Y2 / Y3	Y4 / Y5	Y6
Autumn 1 E-Safety *(Knowsley SOW)*	My Online Life - 1	My Online Life – 3	My Online Life – 5	My Online Life - 6
Autumn 2 Basic Skills	Digital Writing – 1	Dance Mat Typing - *	Desktop Publishing – 3	Powerpoint Presentations - *
Spring 1 Programming	Moving a Robot – 1	Robot Algorithms – 2	Repetition in Shapes – 4	Variables in Games - 6
Spring 2 Programming	Programming Animations – 1	Sequencing Sounds – 3	Selection in Physical Computing – 5	Sensing Movement - 6
Summer 1 Computing Systems and Networks	Technology Around Us – 1	IT Around Us – 2	The Internet – 4	Communication & Collaboration – 6
Summer 2 Creating Media / Data and Information	Digital Painting -1	Pictograms – 2	Stop Frame Animation – 3	Introduction to Spreadsheets - 6

YEAR B	Y1	Y2 / Y3	Y4 / Y5	Y6
Autumn 1 E-safety	My Online Life - 1	My Online Life – 2	My Online Life – 4	My Online Life - 6
Autumn 2 Basic Skills	Digital Writing – 1	Dance Mat Typing	Document Booklets - *	Powerpoint Presentations - *
Spring 1 Programming	Moving a Robot – 1	Programming Quizzes – 2	Repetition in Games – 4	Variables in Games - 6
Spring 2 Programming	Programming Animations – 1	Events & Actions in Programmes – 3	Selection in Quizzes – 5	Sensing Movement - 6
Summer 1 Computing Systems and Networks	Technology Around Us – 1	Connecting Computers – 3	Systems & Searching – 5	Communication & Collaboration – 6
Summer 2 Creating Media / Data and Information	Digital Painting -1	Digital Photography – 2	Video Production – 5	Introduction to Spreadsheets – 6

IMPLEMENTATION – EYFS

Why do we teach Computing? Why do we teach it the way we do?

At Hunton & Arrathorne Primary School our Computing curriculum helps our children to become independent learners who are equipped for their future and we aim for children to gain the knowledge, skills and competencies.

Upon starting school, children are taught the importance of Internet safety, which is an integral part of the Computing curriculum. The children follow simple safety Internet rules and know how to stay safe on line.

What do we teach? What does this look like?

In the Early Years Foundation stage we encouraged the children to use a range of technological resources such as CD players, ipads and programmable toys. This enhances their skills and improves their confidence using IT in the world around them. In Reception during child-initiated time the children are actively encouraged to explore their interests using ipads. The children will also explore taking photograph evidence of their achievements to share with their peers and parents.

What will this look like? By the time children leave our EYFS they will able to:

Personal, Social and Emotional Development

- 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

- Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.

IMPLEMENTATION - Rationale

Our Computing curriculum is carefully designed to be progressive over time. Its structure allows the whole school to work progressively on areas of the curriculum at the same time. For example, each year group begins the year by further developing their understanding of digital literacy. In the second half term, pupils understanding of digital literacy is furthered through 'My Online Life' – a series of lessons, which the children study throughout the school, and progresses their understanding of e-safety and how to keep safe online. Later in the year, the children look in-depth at Computer Science and Information Technology through thematic units where the learning builds year-on-year. Finally, in the second half term of summer the children work on all of their computing skills gained over the year on various projects. The timing of these allows the children to reason with their understanding and master their skills.

In addition to the core curriculum offer technology is a key part of every child's life in school. In order to deliver Computing lessons effectively, laptops and iPads are used within the classroom allowing children to practise skills in a range of contexts. We add to this offer with other forms of technology – for example programming technology and other hardware specific to the skills which children need to develop.

Although studying e-safety specifically for a number of weeks, links are made with online safety through other curriculum areas including PSHE and assemblies. We whole-heartedly believe that children must see the importance of online safety at all times in the year, not just during weeks where it is studied in class.

We follow the Teach Computing resources from the National Centre for Computing Education which ensures that our computing curriculum is progressive. All learning objectives have been mapped to the NCCE's taxonomy of ten strands, which ensures that units build on each other from one year group to the next. Every year group learns through units within the four same themes, which combine the ten strands from the NCCE's taxonomy.

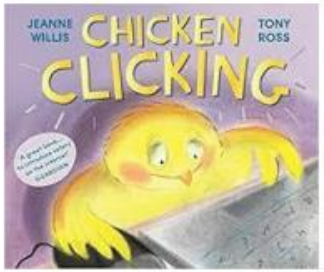
Links are made regularly with other national curriculum subjects; however, children have a designated Computing lesson each week as we are determined not to water down the important skills children must know.

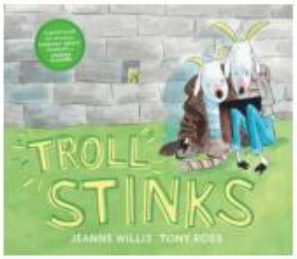
In order to support pupils, staff and parents in the safe use of technology the school uses an E-Safety / Acceptable Use Policy which is updated annually. Our 'Golden Rules' of Be Kind, Be Safe, Be Driven are equally applicable to technology.

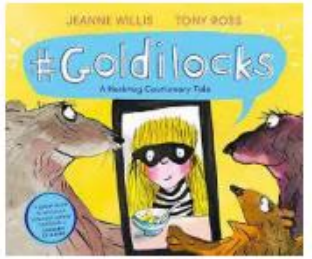
IMPLEMENTATION – Reading in Computing…

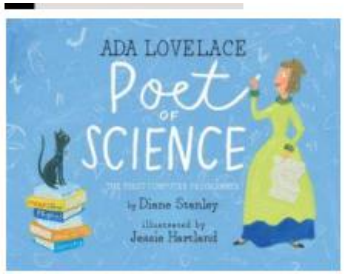
As Lifelong Readers, we want to inspire our children to 'read in Computing'. We have a carefully planned and sequenced reading spine to further engage the children and provide them with high-quality texts in-line with their current topic in Computing.

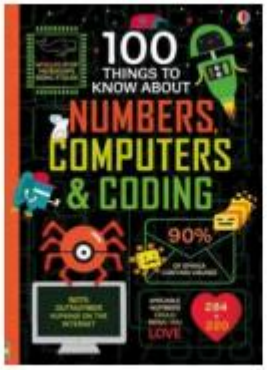
Please see a sample of our core texts for Computing.

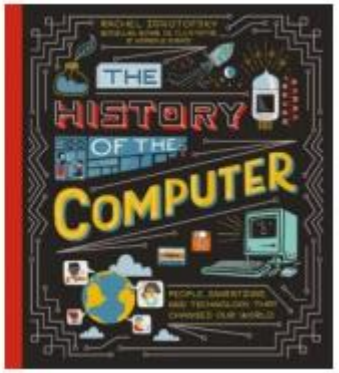












IMPACT

The effect to which our Computing curriculum is successful is measured by the extent to which children live out our intent for the subject 'with a lifelong love of technology'. Children will have developed skills which enable them to be creative in their use of technology and understand how to stay safe online.

Our Computing work is celebrated and assessed for impact through:

- Use of the school assessment tracker
- Whole school displays
- Pupil questionnaires
- Whole school themed weeks/days
- Governor and staff monitoring