Hunton & Arrathorne Community Primary School

Curriculum Document: 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 – Long Term Plan

	Autumn 1 E-Safety	Autumn 2 Creating Media (KS1) Foundational Skills KS2)	Spring 1 Programming	Spring 2 Programming	Summer 1 Computing Systems and Networks	Summer 2 Creating Media, Data and Information
Year 1	My Online Life (1)	Digital Painting	Moving a Robot	Programming Animations	Technology Around Us	Digital Writing
Year 2	My Online Life (2)	Digital Photography	Robot Algorithms	Programming Quizzes	IT Around US	Digital Music
Year 3 / 4 (Year A)	My Online Life (4)	Dance Mat Typing / Typing Documents *	Repetition in Shapes	Repetition in games	The Internet	Photo Editing
Year 3 / 4 (Year B)	My Online Life (3)	Dance Mat Typing / Typing Documents *	Sequencing Sounds	Events and Actions in Programmes	Connecting Computers	Stop Frame Animation
Year 5 / 6 (Year A)	My Online Life (6)	PowerPoints *	Variables in Games	Sensing Movement	Communication and Collaboration	Introduction to Spreadsheets
Year 5 / 6 (Year B)	My Online Life (5)	Desktop Publishing	Selection in Physical Computing	Selection in Quizzes	Systems and Searching	Flat File Databases

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 – KS1

Year 1					
Autumn 1: My Online Life	**Autumn 2:** Digital Painting	**Spring 1:** Moving a Robot	**Spring 2:** Programming Animations	**Summer 1:** Technology Around Us	**Summer 2:** Digital Writing
Sticky Learning: - Know how they should behave and interact with others online. - Know that some people can be unkind online.	**Sticky Learning:** - Choose appropriate tools in a programme to create art. - Make comparisons between digital and non-digital art.	**Sticky Learning:** - Write short algorithms for floor robots. - Predict the outcome of an algorithm.	**Sticky Learning:** - Design and programme a character to make movements on screen.	**Sticky Learning:** - Recognise technology in school and use it responsibly. - Name the key parts of a computer.	**Sticky Learning:** - Know how to open a word processor. - Know how to enter text onto a computer.
Vocabulary: - online - personal information - online bullying - communicate	**Vocabulary:** - programme - erase - fill - undo - brush size - tool	**Vocabulary:** - Beebots - command - instruction - direction - algorithm	**Vocabulary:** - command - sprite - block - change - movement	**Vocabulary:** - technology - computer - mouse - keyboard - screen	**Vocabulary:** - word processor - keyboard - typing - mouse
National Curriculum Link: 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.	**National Curriculum Link:** Use technology purposefully to create digital media.	**National Curriculum Link:** Understand what algorithms are; how they are implemented as programmes on digital devices and that programmes execute by following precise and unambiguous instructions. Create and debug simple programmes. Use logical reasoning to predict the behaviour of simple programmes.		**National Curriculum Link:** Recognise common uses of information technology beyond the school.	**National Curriculum Link:** Use technology purposefully to create, organise, store, manipulate and retrieve digital content.

Year 2					
Autumn 1: **My Online Life**	**Autumn 2:** Digital Photography	**Spring 1:** Robot Algorithms	**Spring 2:** Programming Quizzes	**Summer 1:** IT Around Us	**Summer 2:** Digital Music
Sticky Learning: - Know that login details and passwords should only be shared with trusted adults. - Know what personal information is.	**Sticky Learning:** - Use a digital device to take a photograph. - Know how to edit an image in a simple way.	**Sticky Learning:** - Know how to create and debug a programme. - Use logical reasoning to make a prediction.	**Sticky Learning:** : - Know how to build a sequence of commands. - Debug errors.	**Sticky Learning:** - Know examples of IT around school and around the world. - Know different uses of IT.	**Sticky Learning:** - Know how to connect images with sound. - Know how to create musical pattern on a computer.
Vocabulary: - safe - cyber-bullying - personal information - password	**Vocabulary:** - device - landscape - portrait - framing - subject	**Vocabulary:** - instruction - sequence - prediction - debugging - clear	**Vocabulary:** - sequence - command - predict - modify - build	**Vocabulary:** - information technology - computer - barcode - scanner	**Vocabulary:** - music - pattern - rhythm - open - edit - beat
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IMPLEMENTATION – Lower Key Stage 2

<table>
<tr><th colspan="6">Year 3 / 4 (Year A)</th></tr>
<tr><td>Autumn 1:
My Online Life</td><td>Autumn 2:
Dance Mat Typing / Typing Documents</td><td>Spring 1:
Repetition in Shapes</td><td>Spring 2:
Repetition in Games</td><td>Summer 1:
The Internet</td><td>Summer 2:
Photo Editing</td></tr>
<tr><td><u>Sticky Learning:</u>
- Know the SMART rules about using the internet safely.
- Know the term digital footprint and what this means.</td><td><u>Sticky Learning:</u>
- Develop touch typing skills and correct finger placement for typing documents accurately.
- Know how texts and images can be used together to convey information.</td><td><u>Sticky Learning:</u>
- Crete more complex sequences in block-based programming.
- Use text-based programming language to explore count-controlled loops and infinite loops.</td><td><u>Sticky Learning:</u>
- Know how to make a conditioned control loop.
- Explore conditions and selection using a programmable micro-controller.</td><td><u>Sticky Learning:</u>
- Know that the world wide web is part of the internet.
- Recognise the internet as a network of networks including the www.</td><td><u>Sticky Learning:</u>
- Know how to use photo editing software to edit and adapt physical images.</td></tr>
<tr><td><u>Vocabulary:</u>
- digital footprint
- accept
- reliable
- internet safety</td><td><u>Vocabulary:</u>
- bold
- italic
- space
- backspace
- toolbar
- font</td><td><u>Vocabulary:</u>
- turtle
- commands
- repetition
- count-controlled loop
- procedure</td><td><u>Vocabulary:</u>
- infinite loop
- forever
- duplicate
- refine
- evaluate</td><td><u>Vocabulary:</u>
- internet
- network
- reutter
- web browser
- website
- world wide web</td><td><u>Vocabulary:</u>
- image
- edit
- crop
- effects
- background
- foreground</td></tr>
<tr><td><u>National Curriculum Link:</u>
Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</td><td><u>National Curriculum Link:</u>
Select, use and combine a variety of software to design and create content.</td><td colspan="2"><u>National Curriculum Link:</u>
Design, write and debug programmes that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.

Use sequence, selection and repetition in programmes; 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 programmes.</td><td><u>National Curriculum Link:</u>
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.</td><td><u>National Curriculum Link:</u>
Select, use and combine a variety of software on a range of digital devices to design and create a range of programmes, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.</td></tr>
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Year 3 / 4 (Year B)					
Autumn 1: **My Online Life**	**Autumn 2:** Dance Mat Typing / Typing Documents	**Spring 1:** Sequencing Sounds	**Spring 2:** Events and Actions in Programmes	**Summer 1:** Connecting Computers	**Summer 2:** Stop Frame Animations
Sticky Learning: - Know the SMART rules about using the internet safely. - Know how to use the safety features of websites and how to report concerns.	**Sticky Learning:** - Develop touch typing skills and correct finger placement for typing documents accurately. - Know how texts and images can be used together to convey information.	**Sticky Learning:** - Design algorithms and programmes that sue events to trigger sequences of code.	**Sticky Learning:** - Know how to programme a sprite. - Write algorithms that use a range of events to trigger an action in a sequence.	**Sticky Learning:** - Know that digital devices produce inputs and outputs.	**Sticky Learning:** - Capture and edit digital still images to produce a stop frame animation that tells a story.
Vocabulary: - identity - reputation - fake news - fact - opinion	**Vocabulary:** - bold - italic - space - backspace - toolbar - font	**Vocabulary:** - blocks - commands - code - sprite - motion - sequence	**Vocabulary:** - motion - event - debugging - errors - extension block	**Vocabulary:** - digital device - digital - non-digital - network - connection - programme	**Vocabulary:** - stop frame - sequence - onion-skinning - animation - capture - frame
National Curriculum Link: Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	**National Curriculum Link:** Select, use and combine a variety of software to design and create content.	**National Curriculum Link:** Design, write and debug programmes that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. Use sequence, selection and repetition in programmes; 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 programmes.		**National Curriculum Link:** 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.	**National Curriculum Link:** Select, use and combine a variety of software on a range of digital devices to design and create a range of programmes, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.

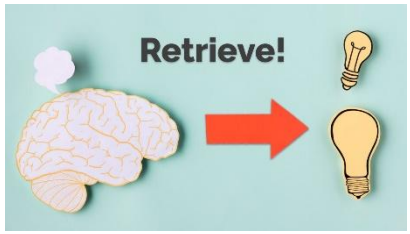
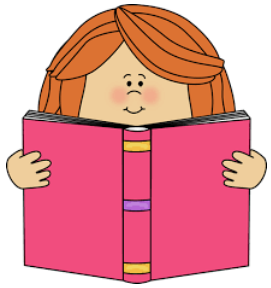
IMPLEMENTATION – Upper Key Stage 2

Year 5 / 6 (Year A)					
Autumn 1: My Online Life	**Autumn 2:** PowerPoints	**Spring 1:** Variables in Games	**Spring 2:** Sensing Movement	**Summer 1:** Communication and Collaboration	**Summer 2:** **Introduction to Spreadsheets**
Sticky Learning: - Know the consequences of making poor online choices. - Know how to block and report inappropriate content.	**Sticky Learning:** - Know how to create a multimedia presentation that combines texts and images.	**Sticky Learning:** - Explore variables when designing and coding a game.	**Sticky Learning:** - Know how to design and code a project which captures inputs from a physical device.	**Sticky Learning:** - Explore how data is transferred by working collaboratively online.	**Sticky Learning:** - Know how to answer questions by using spreadsheets to calculate data.
Vocabulary: - inappropriate - appropriate - self-image - content - identity - private	**Vocabulary:** - animation - effect - slideshow - transitions - insert	**Vocabulary:** - variable - change - project - improve - evaluate - assign	**Vocabulary:** - micro: bit - input - output - USP - variables	**Vocabulary:** - communication - internet protocol (IP) - domain main server (DMS) - packet - collaboration	**Vocabulary:** - data - spreadsheet - cell - column - calculation
National Curriculum Link: Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	**National Curriculum Link:** Select, use and combine a variety of software to design and create content.	**National Curriculum Link:** Design, write and debug programmes that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. Use sequence, selection and repetition in programmes; 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 programmes.		**National Curriculum Link:** 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 appropriately and appreciate how results are selected and ranked.	**National Curriculum Link:** Select, use and combine a variety of software on a range of digital devices to design and create a range of programmes, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.

Year 5 / 6 (Year B)					
Autumn 1: My Online Life	**Autumn 2:** Desktop Publishing	**Spring 1:** Selection in Physical Computing	**Spring 2:** Selection in Quizzes	**Summer 1:** Systems and Searching	**Summer 2:** Video production
Sticky Learning: - Know about the digital 5-a-day plan. - Know that anything posted online can be seen, re-shared and re-used.	**Sticky Learning:** - Know how to manipulate font and use bold, italics and underlining. - Modify texts, images and page layouts for purpose.	**Sticky Learning:** - Know that a loop command repeats instructions. - Justify when to use a loop and when not to.	**Sticky Learning:** - Know the difference between a count-controlled loop and a conditioned-control loop.	**Sticky Learning:** - Know that data can be transferred between IT systems. - Know how to recognise input and output in IT systems.	**Sticky Learning:** - Capture and edit a video. - Know that different filming techniques can create different effects.
Vocabulary: - online identity - online community - trolling - misinformation - security - copyright	**Vocabulary:** - communicate - orientation - template - layout - copy - paste	**Vocabulary:** - microcontroller - components - circuit - connection - connection - USB	**Vocabulary:** - selection - count-controlled loop - conditional - implement	**Vocabulary:** - system - connection - digital - ranking - search engine	**Vocabulary:** - subject - zoom - tilt - panning - close-up - shot
National Curriculum Link: Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	**National Curriculum Link:** Select, use and combine a variety of software to design and create content.	**National Curriculum Link:** Design, write and debug programmes that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. Use sequence, selection and repetition in programmes; 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 programmes.		**National Curriculum Link:** 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 appropriately and appreciate how results are selected and ranked.	**National Curriculum Link:** Select, use and combine a variety of software on a range of digital devices to design and create a range of programmes, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.

IMPLEMENTATION – CODIFYING OUR APPROACH TO COMPUTING

What do Computing lessons look like in our school?

 Each lesson begins with retrieval of the SMART e-safety rules.	 Retrieval of previously learnt content through active learning opportunities.	 Is there an opportunity to <u>read</u> within the subject? An extract from a text, instructions, paragraphs, shared, independent or whole-class?	National Centre for Computing Education We teach the lesson from the National Centre for Computing Education or Knowlsley SOW (for e-safety).	 We reflect on the key learning of the lesson through a short activity – magic questions, exit tickets, talk partners.

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.

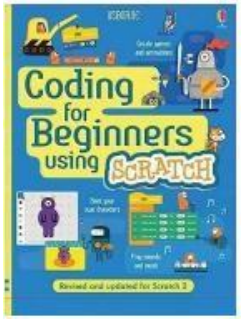
Links are made regularly with other national curriculum subjects; however, children have a designated Computing lesson each week as we are determined not to water down the important skills children must know.

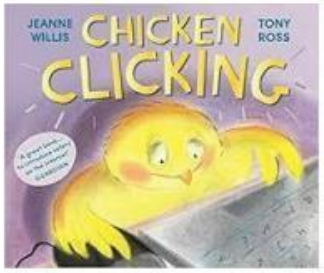
In order to support pupils, staff and parents in the safe use of technology the school uses an E-Safety / Acceptable Use Policy which is updated annually. Our 'Golden Rules' of Be Kind, Be Safe, Be Driven are equally applicable to technology.

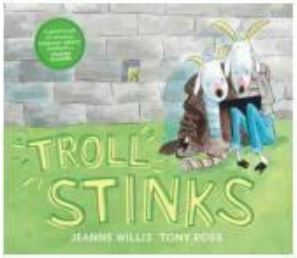
IMPLEMENTATION – Reading in Computing…

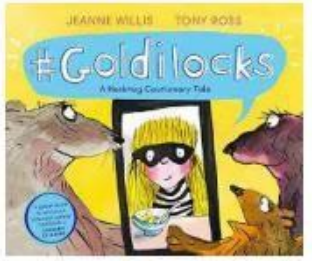
As Lifelong Readers, we want to inspire our children to 'read in Computing'. We have a carefully planned and sequenced reading spine to further engage the children and provide them with high-quality texts in-line with their current topic in Computing.

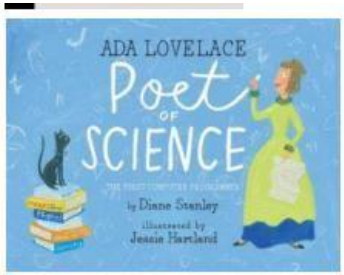
Please see a sample of our core texts for Computing.

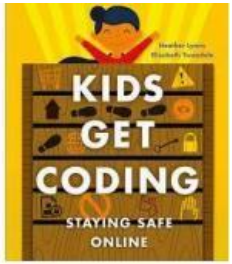


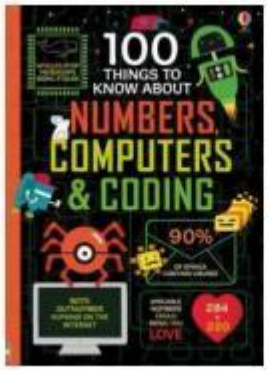


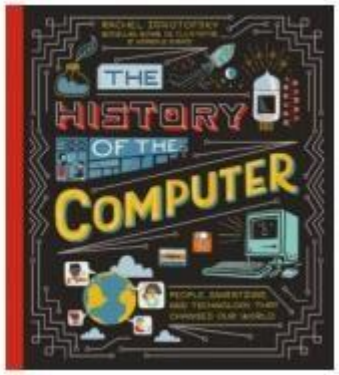












IMPACT

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