



# Success in Computing



## Intent – What do we want to achieve?

At Hardy Mill, we strive for our pupils to be confident digital citizens. Children behave respectfully whilst online and work hard to create a digital footprint to be proud of, making the online world a kinder place. We recognise that technology is constantly moving and adapting and aim to prepare our pupils for technology in school and beyond. The online safety of our pupils is at the heart of our Computing curriculum and is taught throughout our school day.

It is our intention to enable children to use computational thinking skills and concepts to develop their understanding of software, hardware and online resources. We develop confident, independent and critical Computing students that can use their skills both in Computing lessons, across the curriculum and in the wider world. We aim to nurture a resilient nature, where pupils are courageous enough to tinker and explore technology, embrace challenges and reason when encountering technical difficulties.

## Implementation – How do we organise learning?

Key Stage One and Two pupils experience the four strands of Computing: digital citizenship, digital literacy, computer science and information technology. These are taught throughout their time at Hardy Mill, with children showing progression as these four strands are revisited annually, in greater detail with a changing focus. These four strands overlap and connect, with digital citizenship being taught throughout all Computing strands and across the wider curriculum.

While the Early Years curriculum does not feature Computing, we feel that it is essential for all of our children have an understanding of safety online. We teach children how to keep themselves safe online, appropriate amounts of screen time and allow pupils to explore hardware, using beebots and codapillars.

In key stage one, pupils are taught about the essentials of digital citizenship, including keeping personal information safe, assessing if online content is trustworthy and the importance of consent. Children continue their learning with digital literacy, enabling them to input into a device and grasp essential keyboard skills. Pupils go on to explore Computer Science, where they use hardware (bluebots) and software (scratch) to learn how to code, with a focus on algorithms and programming. Children at Hardy Mill then go on to learn about Information technology (learning about Computing pioneers Tim Berners Lee, Jack Kilby and Robert Noyce) before embarking on a summer project to encapsulate all of the skills they have gained and showcase their knowledge of Computing.

For children in lower key stage two, their journey through the Computing curriculum continues. In Digital Citizenship, children consider their digital footprint, online identities, privacy and the importance of your health and wellbeing in the online world. Pupils go on to study Digital Literacy, where they learn further word processing skills, how to create and use graphs and data in spreadsheets and how to create simple animations. In the spring term, children revisit Computer Science, where they continue to build their computational thinking skills and knowledge with a focus on sequences with repeats and loops. Children then further develop their Information Technology skills, using search engines, website evaluation and researching some Computing pioneers (Hedy Lamarr, Radia Perlman, Ada Lovelace and Charles Babbage).

Our most experienced Computer Science students in school, from upper key stage two, continue to develop their digital citizenship skills as they learn about age-related content, capturing and reporting inappropriate online behaviours and how to critically evaluate online content. Children are experienced in Digital Literacy by years five and six and are given the opportunity to choose appropriate software to complete tasks, including using video software. In Computer Science, children use conditionals and variable alongside concepts learned earlier in school. In Information technology, children learn about the history and future of Computing through pioneers Alan Turing, Elon Musk, Grace Hopper, Bill Gates and Steve Wozniak. This study of Computing progress allows pupils to see rapid change in a short time and dream of where technology could take them in the future. Children also learn about the internal components of Computers and how they work.

Through attractive Computing displays, children are given the vocabulary to discuss Computing and explain their working. Strand-by-strand knowledge organisers ensure pupils and staff have a clear awareness of what each strand includes and provides a constant reference point to reflect back on. By providing a supportive environment and a safe classroom space for children to explore the strands of Computing, we aim to nurture resilient, responsible digital citizens who are brave enough to delve into new technologies sensibly and logically. Teachers follow our bespoke curriculum, written alongside Computing specialists to ensure our children develop the range of skills and knowledge needed to flourish in the world of technology.

We have created a comprehensive progression document for staff to follow to best embed and cover every element of the computing curriculum, through digital citizenship, computer science, digital literacy and information technology. The knowledge/skills statements build year on year to deepen and challenge our learners through a two year cycle. We aim to nurture well-rounded digital citizens, who leave Hardy Mill ready for the exciting opportunities and challenges that the world of technology has to offer. By allowing pupils to explore a vast range of software, hardware, apps and devices in a safe space with supportive staff, pupils know how they can get the most out of technology to be the best that they can be.

## Impact

To evaluate how well our children are learning and check that they are remembering more and applying more within the computing curriculum, we use a combination of formative and summative assessments, pupil interviews, planning scrutinies, work scrutinies (using our digital filing system and cloud based work) and lesson observations.

At Hardy Mill we want our children to make outstanding progress, show positive attitudes to their learning, understand their role and impact they can have on the wider world, appreciate our differences and beliefs, participate in the community and respect others.

The outcomes of assessments and observations of our pupils demonstrate that they are very well prepared for the next stage in their computing knowledge and skills when they leave Hardy Mill and make good progress from their starting points.

# National Curriculum - Computing

<b>Purpose of study</b>		
<p>A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.</p>		
<b>Aims</b>		
<p>The national curriculum for computing aims to ensure that all pupils:</p> <ul style="list-style-type: none"> <li>• can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation</li> <li>• can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems</li> <li>• can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems</li> <li>• are responsible, competent, confident and creative users of information and communication technology.</li> </ul>		
<b>EYFS</b>	<b>KS1</b>	<b>KS2</b>
<ul style="list-style-type: none"> <li>• There are no early learning goals that directly relate to computing objectives, though it is still expected that children will be introduced to appropriate technology and use it within their</li> </ul>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions</li> <li>• create and debug simple programs</li> <li>• use logical reasoning to predict the behaviour of simple programs</li> <li>• use technology purposefully to create, organise, store, manipulate and retrieve digital content</li> <li>• recognise common uses of information technology beyond school</li> <li>• use technology safely and respectfully, keeping personal information private; identify where to go for help and</li> </ul>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</li> <li>• use sequence, selection, and repetition in programs; work with variables and various forms of input and output</li> <li>• use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</li> <li>• 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</li> </ul>

<p>provision.</p>	<p>support when they have concerns about content or contact on the internet or other online technologies.</p>	<ul style="list-style-type: none"><li>• use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content</li><li>• 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</li><li>• use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</li></ul>
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## Hardy Mill Long Term Plan – Computing

		Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<b>KS1</b>	<b>Cycle A</b>	Digital Citizenship	Digital Literacy	Computer Science	Computer Science	Information Technology	Consolidation project for Digital Literacy
	<b>Cycle B</b>	Digital Citizenship	Digital Literacy	Computer Science	Computer Science	Information Technology	Consolidation project for Digital Literacy
<b>LKS2</b>	<b>Cycle A</b>	Digital Citizenship	Digital Literacy	Computer Science	Computer Science	Information Technology	Consolidation project for Digital Literacy
	<b>Cycle B</b>	Digital Citizenship	Digital Literacy	Computer Science	Computer Science	Information Technology	Consolidation project for Digital Literacy
<b>UKS2</b>	<b>Cycle A</b>	Digital Citizenship	Digital Literacy	Computer Science	Computer Science	Information Technology	Consolidation project for Digital Literacy
	<b>Cycle B</b>	Digital Citizenship	Digital Literacy	Computer Science	Computer Science	Information Technology	Consolidation project for Digital Literacy

## How do we know our children have made progress? What are their end points?

End of  
EYFS

### Digital Citizenship

Pupils know how to:

- Recognise that I can say 'no' / 'please stop' / 'I'll tell' / 'I'll ask' to somebody who asks me to do something that makes me feel sad, embarrassed or upset
- Give examples of how technology can be used to communicate with others
- Describe ways that people can be unkind online
- Name some rules for keeping us safe and healthy when using technology
- Name some examples of personal information and who they can trust to share them with

End of  
KS1

### Digital Citizenship

Pupils know:

- What their digital footprint is
- How to access the internet in an age appropriate way
- What information should be kept private
- How to behave appropriately online
- That people might behave and communicate differently online and in real life
- That it is OK to say "no"
- To think carefully before adding information about myself online
- What bullying behavior looks like
- How we can stay safe online in different situations, spot warning signs and get help if we need it

### Digital Literacy

Pupils know how to:

- Log in
- Type
- Format text
- Use arrow keys and the mouse accurately
- Keyboard skills, including using the space bar, enter key and caps lock
- Insert a table and image
- Use the undo and redo buttons

### Computer Science

Pupils know how to:

- Follow an algorithm
- Follow and develop directional language
- Predict outcomes of programs
- Plan, write and record algorithms on a variety of digital devices

- Debug algorithms
- Write algorithms for everyday tasks
- Implement simple algorithms by inputting them into digital devices e.g. Blue Bots

### **Information Technology**

Pupils know how to:

- Search using digital technology and key words
- Search on/using the WWW and understand if information is real or imaginary
- Research significant figures in Computing and their lasting impact, such as Jack Kilby, Robert Noyce and Tim Berners Lee.
- Computers communicate with each other using the internet and local networks

Pupils know:

- Why we use passwords
- That people own their work online

**End of  
LKS2**

### **Digital Citizenship**

Pupils know:

- What their digital footprint is
- That online and real life identities differ
- The concepts of trust, likes and feelings while online
- That people can overshare information that should be kept private
- The impact of people being unkind online, bullying and how this can affect people
- How to develop a healthy balance between online and real life activity
- How to respect others while online and be aware of how online behaviour and content can impact on others
- That anyone can search online profiles for information
- The positives and negatives to using technology

### **Digital Literacy**

Pupils know how to:

- Log in
- Type with increasing speed and accuracy
- Use keyboard skills, including keyboard shortcuts
- Format text, including using indents, bullet points
- Format images, including resizing, moving and rotating
- Table skills, including adding, deleting, resizing and merging columns
- Folder skills including creating, renaming and moving files
- Use and create spreadsheets, including formatting cells, creating graphs and using formula

### **Computer Science**

Pupils know:

- That a sequence is the order that a set of instructions are carried out
- That repeat and loops are parts of the program that are to be repeated introduction to repeat / loop
- What algorithms, program and sequences are in a variety of contexts
- How to predict the outcome of a simple program
- The difference between an algorithm and a program
- How to plan an algorithm and then create the program
- How to record an algorithm
- How to debug a simple program when the outcome is not as expected
- How to transfer Computer Science skills between different software and hardware
- How to plan and create a program using a repeat/loop command
- How to predict the outcome of repeat and the implications of reordering the repeat

### **Information Technology**

Pupils know:

- How to research significant figures in Computing and how they developed technology, such as Ada Lovelace, Charles Babbage, Hedy Lemarr & Radia Perlman
- How search engines help us find information
- The importance of strong passwords and how to share information safely
- How searching works and how to evaluate a website – 5 Ws (who, what, when, where, why)

End of  
UKS2

### **Digital Citizenship**

Pupils know:

- What their digital footprint is and the lasting impact
- How to make responsible choices when sharing online
- When and how to get help online (reporting, CEOP etc)
- How to differentiate between types of bullying and how to capture evidence
- How to promote health and well-being with regards to using technology
- How to critically evaluate and reject inappropriate representations online
- How to be kind and respect others online
- How to protect your digital personality
- That common systems that regulate age-related content

### **Digital Literacy**

Pupils know:

- How to confidently word process at increasing speed across a range of software
- How to use, format and create databases and graphs
- How to representing data appropriately in a given context
- How to review, edit and discuss why changes have been made to work
- How to create work appropriate to audience
- How to use Computer Aided Design (CAD)
- How to evaluate websites using reliable websites and sources



- How to be independent when choosing appropriate software to create content
- How to use video editing software

### **Computer Science**

Pupils know:

- That selection and conditional are using an 'if' statement in a computer program
- That variables are part of a program that can change
- What algorithms, programs, sequences/repeats, selections and conditionals are in a range of contexts
- Know the different between an algorithm and a program
- How to predict the outcome of repeat and the implications of reordering the repeat
- How to plan and create a program using a repeat command
- How to debug code when the outcome is not as expected
- How to transfer skills between different software and hardware
- How to predict the outcome of the program and the implications of reordering the code
- How to plan and program a quiz using selection
- What abstraction is when programming

### **Information Technology**

Pupils know:

- Research Grace Hopper, Bill Gates & Steve Wozniak; how did they develop technology
- Search engines, safe searching and copyright
- Find, save and import images and information from the internet
- How searching works and how to evaluate a website – 5 W's
- Reinforce the basics of using technology in our everyday lives.
- What the internal parts of a computer are and how they work

## Progression of knowledge in Computing at Hardy Mill

	<p style="text-align: center;">EYFS</p>	<p style="text-align: center;">KS1</p>		<p style="text-align: center;">LKS2</p>		<p style="text-align: center;">UKS2</p>	
		<p style="text-align: center;">Y1</p>	<p style="text-align: center;">Y2</p>	<p style="text-align: center;">Y3</p>	<p style="text-align: center;">Y4</p>	<p style="text-align: center;">Y5</p>	<p style="text-align: center;">Y6</p>
<p><b>Digital Citizenship</b></p> <p>Self-image and Identity Online relationships Online reputation Online bullying Health, wellbeing and lifestyle</p>	<p>I know about my digital footprint</p> <p>I know what online or offline means, that anyone can say 'no' / 'please stop' / 'I'll tell' / 'I'll ask' to somebody who makes them feel sad, uncomfortable, embarrassed or upset</p>	<p>I know about my digital footprint and explain how other people may look and act differently online and offline</p> <p>I know that there may be people online who could make me feel sad, embarrassed or upset.</p> <p>I know how to behave online in ways that do not upset others and can give examples</p> <p>I know to speak to a trusted adult if I feel upset about something I've experienced online and to ask permission to act online before pressing agree or accept</p> <p>I know how someone might use technology to communicate with others they don't also know offline and explain why this might be risky. (e.g. email, online gaming, a pen-pal in another school / country)</p> <p>I know that information can stay online and could be copied and can last a long time</p> <p>I know what bullying is, how people may bully others and how bullying can make someone feel</p>	<p>I know how my online and offline identities can differ and can explain why people may change their online identity</p> <p>I know how to talk about my digital footprint</p> <p>I know that others online can pretend to be someone else and why they might do this</p> <p>I know examples of how to be respectful, healthy and unhealthy behaviours look like online</p> <p>I know what is meant by 'trusting someone online' and why it is important to be careful about who to trust online</p> <p>I know how someone's feelings can be hurt by what is said or written online</p> <p>I know I should be careful when I share personal information online</p> <p>I know ways that some people can be unkind online and how this can make others feel</p> <p>I know why spending too much time using technology can sometimes have a negative impact on anyone</p>	<p>I know about my digital footprint and demonstrate responsible choices about my online identity</p> <p>I know how identity online can be copied, modified or altered</p> <p>I know how someone can get help if they are having problems and identify when to tell a trusted adult</p> <p>I know ways that information about anyone online can be used by others to make judgments about an individual and why these may be incorrect</p> <p>I know online bullying can be different to bullying in the physical world</p> <p>I know the helpline services which can help people experiencing bullying, and how to access them</p> <p>I know ways technology can affect health and well-being both positively and negatively</p> <p>I know some strategies, tips or advice to promote health and well-being with regards to technology</p> <p>I know the benefits and risks of accessing information about health</p>			

		<p>I know rules to keep us safe when we are using technology both in and beyond the home</p>	<p>and may need to be limited</p> <p>I know how to find out information about others by searching online</p> <p>I know ways people can be bullied through a range of media</p> <p>I know why people need to think carefully about how content they post might affect others, their feelings and how it may affect how others feel about them (their reputation)</p> <p>I know how using technology can be a distraction from other things, in both a positive and negative way</p> <p>I know positive ways for someone to interact with others online and understand how this will positively impact on how others perceive them</p> <p>I know strategies for safe and fun experiences in a range of online social environments</p> <p>I know ways that some of the information about anyone online could have been created, copied or shared by others</p> <p>I know the importance of giving and gaining permission before sharing things online</p> <p>I know ways people who have similar likes and interests can get together online</p> <p>I know what it means to 'know someone' online and why this might be different from knowing someone</p>	<p>and well-being online and how we should balance this with talking to trusted adults and professionals</p> <p>I know about my digital footprint and the importance of asking until I get the help needed</p> <p>I know and critically evaluate online content relating to gender, race, religion, disability, culture and other groups, and explain why it is important to challenge and reject inappropriate representations online</p> <p>I know issues online that could make anyone feel sad, worried, uncomfortable or frightened and how to get help</p> <p>I know how sharing something online may have an impact either positively or negatively</p> <p>I know strategies anyone can use to protect their 'digital personality' and online reputation, including degrees of <b>anonymity</b></p> <p>I know common systems that regulate age-related and describe their purpose</p>
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			<p>offline</p> <p>I know why someone may change their mind about trusting anyone with something if they feel nervous, uncomfortable or worried</p> <p>I know who I can ask if I am unsure about putting something online</p> <p>I know how to search for information about others online</p> <p>I know why some online activities have age restrictions and why this is important</p>	
<b>Digital Literacy</b>		<p><b>I know :</b></p> <ul style="list-style-type: none"> <li>• the main keys for typing e.g. shift, space bar, full stop</li> <li>• simple keyboard shortcuts Ctrl + B, I, U to edit my text style</li> <li>• which page orientation would best suit my work. e.g. portrait to landscape</li> </ul>	<p><b>I know:</b></p> <ul style="list-style-type: none"> <li>• why I have chosen my layout and formatting</li> <li>• the difference between save and save as</li> </ul>	<p><b>I know...</b></p> <ul style="list-style-type: none"> <li>• why I have chosen my layout and formatting</li> <li>• whether my work is suitable for the audience</li> </ul>
<b>Computer Science</b>		<p>I know:</p> <ul style="list-style-type: none"> <li>• what an <b>algorithm</b> is</li> <li>• what a <b>program</b> is</li> <li>• what an <b>event</b> is</li> <li>• programs need an event to begin</li> <li>• that computers need precise instructions</li> </ul>	<p>I know:</p> <ul style="list-style-type: none"> <li>• that a <b>sequence</b> is a list of instructions in a particular order</li> <li>• that if I change the sequence I may change the outcome of the program</li> <li>• what a <b>repeat</b> is</li> </ul>	<p>I know:</p> <ul style="list-style-type: none"> <li>• what a conditional / selection is</li> <li>• what a variable is</li> </ul>
<p><b>Information Technology</b></p> <p><b>Education for a Connected World</b></p>		<p>I know:</p> <ul style="list-style-type: none"> <li>• simple examples of how to find information</li> <li>• the difference between things that are imaginary and things</li> </ul>	<p>I know:</p> <ul style="list-style-type: none"> <li>• the difference between a 'belief', an 'opinion' and a 'fact. and where they might be shared online</li> <li>• strategies for keeping personal</li> </ul>	<p>I know:</p> <ul style="list-style-type: none"> <li>• what an operating system is and why it important</li> <li>• I know what is meant by 'being sceptical' and why it is important</li> <li>• key concepts including:</li> </ul>

<p>Managing online information Privacy and security Copyright and ownership</p>		<p>that are 'real'</p> <ul style="list-style-type: none"> <li>• how passwords can be used to protect information, accounts and devices</li> <li>• examples of information that is personal to someone and can give examples</li> <li>• why it is important to always ask a trusted adult before sharing any personal information online</li> <li>• why work I create using technology belongs to me and content on the internet may belong to others</li> <li>• what devices in the homes connect to the internet</li> </ul>	<p>information and passwords private</p> <ul style="list-style-type: none"> <li>• reasons why someone should only share information with people they can trust</li> <li>• that if they are not sure or feel pressured then they should tell a trusted adult.</li> <li>• why copying someone else's work from the internet without permission isn't fair and what problems this might cause</li> <li>• what is meant by <b>fake news</b></li> <li>• what the <b>digital age of consent</b> is and the impact this has on online services asking for consent</li> <li>• that work created by others does not belong to me even if I save a copy</li> <li>• a range of internet standards</li> </ul>	<p>information, reviews, fact, opinion, belief, validity, reliability and evidence</p> <ul style="list-style-type: none"> <li>• what a strong password is and demonstrate how to create one</li> <li>• what app permissions are</li> <li>• examples of content that is permitted to be reused</li> <li>• how search engines work and how results are selected and ranked</li> <li>• how and why some people may present 'opinions' as 'facts' and that it may not be true, fair or legal</li> <li>• how some online information can be opinion</li> <li>• the terms 'influence', 'manipulation' and 'persuasion' and explain how someone might encounter these online</li> <li>• how and why people should keep their software and apps up to date</li> <li>• simple ways to increase privacy on apps and services that provide privacy settings</li> <li>• what technology might look like in twenty years' time</li> </ul>
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## Progression of skills in computing at Hardy Mill

	EYFS	KS1		LKS2		UKS2	
		Y1	Y2	Y3	Y4	Y5	Y6
<p><b>Digital Citizenship</b></p> <p><b>Education for a Connected World</b></p> <p>It focuses specifically on eight different aspects of online education:</p> <p>Self-image and Identity</p> <p>Online relationships</p> <p>Online reputation</p> <p>Online bullying</p> <p>Health, wellbeing and lifestyle</p>	<p><b>Digital Citizenship and Digital Literacy</b></p> <p>I know how I (might) use technology to communicate with people I know</p>	<p>I know how to use the internet with adult support to communicate with people I know</p>		<p>I know how to use technology safely, respectfully, responsibly and be able to talk about my digital footprint</p>		<p>I know how to be kind, show respect for and support others online</p> <p>I know how to capture bullying content as evidence to share with others who can help me</p> <p>I know how to assess and action different strategies to limit the impact of technology on health</p> <p>I know how to discuss the pressures that technology can place on someone and how to manage this</p> <p>I know how to recognise features of <b>persuasive design</b> and how they keep users engaged</p> <p>I know how to search for information about an individual online and summarise the information found</p> <p>I know how to identify a range of ways to report concerns and access support about online bullying</p> <p>I know how to block abusive users</p>	

<p><b>Digital Literacy</b></p>		<p><b>Word Processing</b></p> <p>I know:</p> <ul style="list-style-type: none"> <li>• how to how to input text and images</li> <li>• how to format my typing and text</li> <li>• how to use the 'undo' icon to fix a mistake</li> <li>• how to use spell checker</li> <li>• how to use the return key to insert line breaks, the arrow keys and mouse</li> <li>• how to save an image from the internet</li> <li>• how to add a page border</li> <li>• how to insert a basic table</li> <li>• how to use a range of ICT devices to create a sequence of sounds</li> <li>• how to use a digital video camera to capture film and images</li> <li>• how to arrange clips to make a short film that conveys meaning</li> <li>• how to add simple titles and credits</li> <li>• how to plan a simple Y/N tree diagram to sort information</li> <li>• how to create and search a branching database</li> <li>• how to use and search a database to answer simple questions and find information</li> </ul>	<p><b>Word Processing</b></p> <p>I know:</p> <ul style="list-style-type: none"> <li>• how to type a number of sentences using the keyboard</li> <li>• how to use tab to indent paragraphs</li> <li>• how to use cut, copy and paste to re-order text</li> <li>• how to use keyboard shortcuts</li> <li>• how to use bullet points, speech bubbles, auto shapes and text boxes</li> <li>• how to format wrapping/layout of text boxes and images in word</li> <li>• how to format text, images and word art</li> <li>• how to use a variety of table tools (merge cells, fill, columns etc.)</li> <li>• how to create a folder and rename it</li> <li>• how to include imported images, hyperlinks and the use of sounds recorded</li> </ul> <p><b>Spreadsheets</b></p> <p>I know:</p> <ul style="list-style-type: none"> <li>• how to enter and use a basic mathematical formula into Excel, including SUM</li> <li>• how to change the look of a spreadsheet by using different formats</li> <li>• how to insert and delete columns</li> </ul>	<p><b>Spreadsheets and Word Processing</b></p> <p>I know:</p> <ul style="list-style-type: none"> <li>• how to choose, select and use a combination of software to present my work</li> <li>• how to select appropriate tools to add emphasis and effect to my work</li> <li>• how to draft and redraft my work by deleting, inserting and replacing text</li> <li>• how to consider whether my work is suitable for the audience</li> <li>• how to review and edit my work and explain changes</li> <li>• how to create a database structure and enter data</li> <li>• how to prepare a data collection form and collect information</li> <li>• how to interpret graphs of data collected from a variety of sources</li> </ul> <p><b>Creativity</b></p> <p>I know:</p> <ul style="list-style-type: none"> <li>• how to design a 3D model using ICT to meet a specific goal</li> <li>• how to evaluate and improve my designs</li> <li>• how to evaluate website and web content</li> </ul> <p><b>Creation</b></p> <p>I know:</p> <ul style="list-style-type: none"> <li>• how to use a mobile device to film a short clip</li> <li>• how to consider the effect of</li> </ul>
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		<ul style="list-style-type: none"> <li>• how to use ICT to support handling data</li> <li>• how to create a pictogram by entering data into a simple graphing package</li> <li>• how to use a pictogram to answer simple questions</li> <li>• how to explore sounds in a music programme or sound app</li> </ul>	<p>and rows in a spreadsheet</p> <ul style="list-style-type: none"> <li>• to use spreadsheets to create a graph</li> <li>• how to decide on the most appropriate form of graph for a data set</li> <li>• how to interpret graphs of data collected from sensors</li> </ul>	<p>camera angles, light and shadow when filming</p> <ul style="list-style-type: none"> <li>• how to add titles, credits, transitions and special effects</li> <li>• how to review and add to, replace and edit clips to make messages clearer</li> <li>• how to export / embed a video in different formats for different purposes</li> </ul>
<b>Computer Science</b>		<p>I know:</p> <ul style="list-style-type: none"> <li>• how to plan a simple algorithm</li> <li>• how to give and follow commands one at a time and several in order</li> <li>• how to debug a simple algorithm that is causing an unexpected outcome.</li> <li>• how to decompose an algorithm</li> <li>• how to predict if a simple algorithm will work</li> <li>• how to plan use logical reasoning to predict outcomes</li> <li>• how to create a program that contains several commands</li> <li>• how to debug a program independently</li> <li>• how to use different events to start my programs – timing / on click / on button press</li> </ul>	<p>I know:</p> <ul style="list-style-type: none"> <li>• how to sequence a simple program to produce a line drawing of a 2D shape</li> <li>• how to solve problems by decomposing them</li> <li>• how to detect and debug errors in my sequence</li> <li>• how to use and edit a program to achieve a specific outcome</li> <li>• how to use logical reasoning to explain what will happen next</li> <li>• how to predict how a change in a sequence may impact on the outcome of a program</li> <li>• how to use repeats in programs</li> <li>• how to independently select repeat and sequence code to make my own program</li> <li>• how to detect and debug errors in algorithms and programs.</li> <li>• how to transfer my coding skills</li> </ul>	<p>I know:</p> <ul style="list-style-type: none"> <li>• how to plan algorithms and write a program using the following: commands, sequence, repetition and selection / conditional</li> <li>• how to detect and debug errors in more complex algorithms and programs</li> <li>• how to use selection to create games in which the user must make a choice</li> <li>• how to confidently use events, repeats, selection and variables</li> <li>• how to confidently decompose a problem and methodically create a program to solve it, testing and adapting as I go</li> <li>• how to evaluate the effectiveness of my programming and suggest improvements</li> <li>• how to use the Blockly programming language</li> </ul>



			<p>between software</p> <ul style="list-style-type: none"> <li>• how to explain why it is important to use the repeat function in a particular place in my sequence</li> </ul>	
<p><b>Information Technology</b></p> <p><b>Education for a Connected World</b></p> <p>Managing online information</p> <p>Privacy and security</p> <p>Copyright and ownership</p>	<p>I know:</p> <ul style="list-style-type: none"> <li>• who would be trustworthy to share this information with; I can explain why they are trusted</li> <li>• how to name my work so that others know it belongs to me</li> </ul>	<p>I know:</p> <ul style="list-style-type: none"> <li>• how to use simple keywords in search engines</li> <li>• how to navigate a simple webpage to get to information I need</li> <li>• how to get help from a trusted adult if we see content that makes us feel sad, uncomfortable worried or frightened</li> <li>• how to save my work (Purplemash) so that others know it belongs to me (e.g. filename, name on content)</li> <li>• how to log on and off the school network using my individual username and password</li> <li>• how to save my work to Purplemash or the school network</li> </ul>	<p>I know:</p> <ul style="list-style-type: none"> <li>• how to use key phrases in search engines to gather accurate information online</li> <li>• how to analyse information to make a judgement about accuracy, making my own decisions regarding content</li> <li>• how to search for information within a wide group of technologies and make a judgement about the probable accuracy</li> <li>• how to save my work under a suitable title / name so that others know it belongs to me (e.g. filename, name on content)</li> </ul>	<p>I know:</p> <ul style="list-style-type: none"> <li>• how to identify and explain the functions of the key internal parts of a computer – RAM, memory, processor and motherboard</li> <li>• how to evaluate digital content and can explain what is trustworthy</li> <li>• how to assess and justify when it is acceptable to use the work of others</li> <li>• how to use search technologies effectively</li> <li>• how to make references to and acknowledge sources I have used from the internet</li> <li>• how to demonstrate the use of search tools to find and access online content</li> <li>• how to independently save and retrieve work from different places</li> <li>• how to discuss what it means to save work locally, to a network or to a 'Cloud'</li> </ul>

## Progression of vocabulary in Computing at Hardy Mill

	EYFS	KS1	LKS2	UKS2
<b>Computer Science</b>		computer science computational thinking algorithm program decompose debugging/ deglitching abstraction Input / output unplugged event blocks mathematical language	computer science computational thinking algorithm program sequence repeat/loop decompose debugging/ deglitching abstraction Input / output unplugged event blocks mathematical language	computer science computational thinking algorithm program sequence repeat conditional / selection decompose debugging/ deglitching variables abstraction Input / output unplugged event blocks mathematical language

<p style="text-align: center;"><b>Digital Literacy</b></p>		<p>Digital Literacy  word processing  keyboard keys  sentences  punctuation  caps lock shift  space bar  document  cursor  insert  formatting  abstraction  exclamation marks  question marks  table  row / column</p>	<p>Digital Literacy  formatting  layout  audience  appropriate and relevant  abstraction  background  animation  transition  keyboard shortcut  insert  cursor  spreadsheet  formula  SUM  AutoSum  sort  filter  formatting  layout  appropriate  border</p>	<p>Digital Literacy  database  record  field  spreadsheet  formula  sort  filter  abstraction  appropriate  formatting  layout  appropriate  relevant  audience  data</p>
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