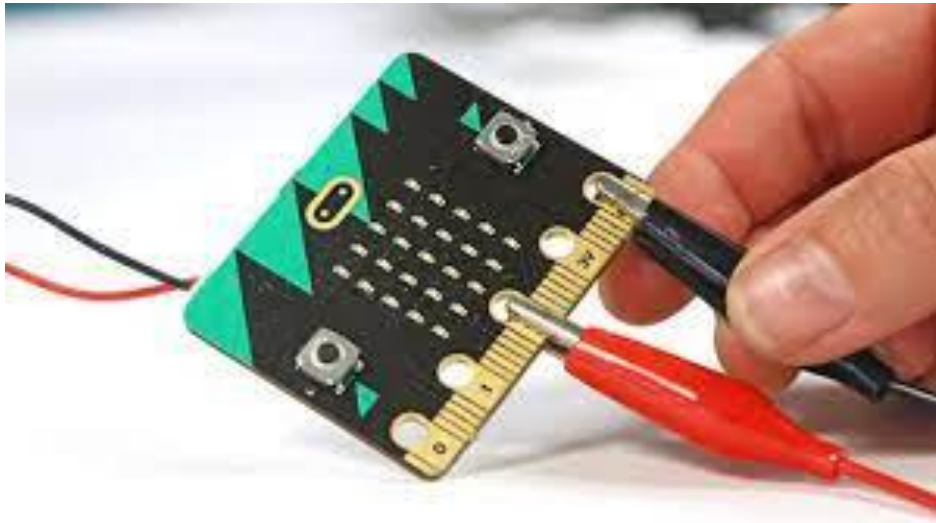


**COMPUTING**  
**AT**  
**ALMOND HILL JUNIOR SCHOOL**



## Intent

At Almond Hill we aim to equip our children with computational skills and knowledge that enable them to become 'lifelong learners'. We teach, encourage and model positive learning behaviours to promote responsible, resilient individuals that are ready for the technological future.

### *Computing* By the end of KS2 children can:

- use computational thinking and creativity on a range of programming tasks
- understand how digital systems work
- express themselves with information communication technology
- be ready to build KS3 skills on a solid foundation, preparing them for the digital world

### *Online Safety* By the end of KS2 children can:

- Live knowledgeably, responsibly and safely in a digital world.

[Aspects explored: Self-image, online reputation, online bullying, managing online information, health, wellbeing and lifestyles, privacy and security, copyright and ownership]

## Implementation

At Almond Hill we implement a 1-hour weekly Computing lesson which follows an adapted version of the 'Herts for Learning' computing scheme 6, building on prior knowledge from KS1 where possible. Version 6 of the 'Herts for Learning' computing scheme ensures that each computing theme and its associate strands are covered systematically. Year specific Micro:bit project days are taught annually which focus on computational thinking, programming and computer systems with cross curricular links. Each project uses cross curricular links to explore specific skills in the computing curriculum. Computational Thinking: abstraction, algorithms, flow charts, pseudocode. Programming: representation, selection, data handling, iteration, variables. Computer Systems: input/output. All children have a Microsoft 365 login and password which they use to access a shared student area. Our school uses the UK Council for Child Internet Safety (UKCCIS) framework. This framework describes the skills and understanding that children should have to keep them safe when using technology. It highlights what a child should know in terms of current online technology, its influence on behaviour and development, and what skills they need to be able to navigate it safely. All classrooms have interactive whiteboards to enhance children's learning. We have a computing suite, class sets of iPads, physical systems (class sets of Micro:bits), Bee-Bots, robotics kits (cars and robot faces) Log Box data loggers and digital cameras. We use a range of software in the topics and teach the children to understand and navigate the network. All children follow the Almond Hill Online Safety Rules and have agreed to our acceptable use policy. We update our website regularly with online safety information and have had guest speakers in to discuss this area with both children, parents and staff. We have used the data from an online safety survey for Almond Hill children to create a safety video for our parents. We seek links with our feeder school to ensure that the transition from KS1 to KS2 is as successful as it can be.

## SEND

To ensure that the Computing curriculum is inclusive for children with SEND lessons may need to be adapted to provide appropriate provision. This could be in the form of any of the following:

- Adapted tasks
- Adapted resources / equipment
- Additional support

# Topics Across Almond Hill

	Year 3	Year 4	Year 5	Year 6
Autumn 1	Bringing Images to Life	Authoring	Robotics & Systems	Sound Works
Autumn 2				
Spring 1	Developing Communications	Programming & Games	Data Matters	Informational Models UKS
Spring 2	Online Safety*	Online Safety*	Online Safety*	Online Safety*
Summer 1	Keeping Informed	Accuracy Counts	Morphing Images	Staying Connected
Summer 2				

\* Online Safety is taught with each topic area as well as a **standalone unit** for objectives that were not linked with each topic

Computational thinking/programming/computer systems taught in Day of Micro:bits which run across each year group across the year.

## Progression of Skills in Computing

### Years 3-6

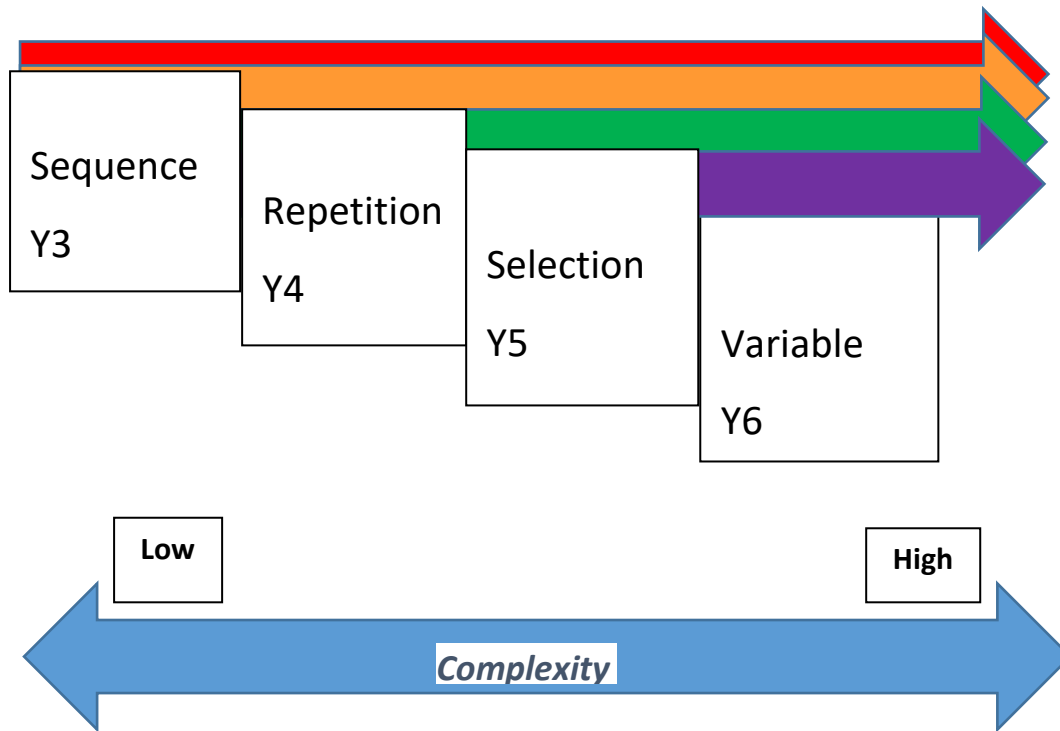
#### Key

<b>Create</b>	Select and use different digital applications on a range of digital devices to create, organise, manipulate, store, retrieve, review and present varied digital content (word-based, still and moving image, sound etc.) for specific purposes. Combine digital materials from different sources to create digital content to achieve given goals. Increasingly understand how the devices and systems they use work.
<b>Digital Research</b>	Become discerning, safe and responsible users of online technologies; derive data from a number of sources, including pictorial; use digital research tools effectively, understanding broadly how they work and considering factors affecting search results; evaluate the resulting data, refining and editing it to make it their own. Increasingly understand intellectual property and copyright, crediting the sources they use appropriately.
<b>Info ... Info</b>	Collect, organise, evaluate and analyse data to present as information. Use varied tools including branching and flat file databases, and spreadsheets. Develop use of graphs, charts and tables, including pictograms, bar and pie charts, line graphs, Carroll and Venn diagrams and mind maps. Use data-loggers and sensors to monitor changes in environmental conditions and collect and analyse data, using it in other applications. Develop models to explore patterns and test hypotheses. Investigate how data is collected, analysed, combined and used in the wider world.
<b>Digital Communication</b>	Develop an understanding of networks and systems. Use a range of digital tools safely and appropriately for communication and collaboration to support learning in and beyond school; keep personal information secure, respect the rights of others, including their intellectual property rights, and demonstrate and promote good eSafe behaviour.
<b>eWorlds</b>	Develop an understanding of programming in the context of devices, automated systems, simulations and games. Relate to the creation of algorithms and the use of algorithms in program design. Investigate natural systems, beginning to use abstraction to support them in making comparisons with digital systems. Apply logical reasoning and precision to program design, using decomposition to break problems into smaller parts. Design, create, test, debug and refine algorithms and programs for specific purposes. Use a range of programming languages in both onscreen and physical environments, employing sequence, repetition, selection and variables appropriately. Program inputs and outputs in physical and onscreen systems, including inputs from sensors and environmental monitoring. Predict the outcome of programs, using this to support good programming practice.
<b>Online Safety*</b>	Empower, build resilience and effect a positive culture change. Develop safe, informed and appropriate long term behaviours. (Strands include: Self-Image and Identity, Online Relationships, Managing Online Information, Health, Well-Being and Lifestyle, Online Reputation, Online Bullying, Privacy and Security and Copyright and Ownership)

- Online Safety objectives are taught within computing units where relevant. Certain objectives are taught in standalone lessons to ensure full coverage of the UK Council for Child Internet Safety (UKCCIS) framework.

	Lower KS2 children:	Upper KS2 children:
Create	<ul style="list-style-type: none"> <li>develop understanding of digital images.</li> <li>transform and edit images, respecting copyright and ownership.</li> <li>explore stop animation creating their own versions.</li> <li>investigate computing storage capacities and ways of saving data.</li> <li>develop understanding of the school network and operating systems.</li> <li>use varied resources to create digital content, creating and manipulating images and words.</li> <li>select and use software to create non-linear content for specific audiences and objectives.</li> <li>use simple sound editing software to record and manipulate sound clips.</li> </ul>	<ul style="list-style-type: none"> <li>use 3D graphical modelling to create and explore objects.</li> <li>Review and understand operating systems.</li> <li>evaluate films and animations, going on to create live film or animations for specific audiences.</li> <li>review how digital sound is used in the world and how it has developed over time.</li> <li>create multi-track sound recordings for specific audiences, incorporating different content</li> <li>use programming languages to create their own sound clips.</li> <li>demonstrating their understanding of the rules for copyright.</li> </ul>
Digital research	<ul style="list-style-type: none"> <li>understand computer networks including the internet and the services it offers.</li> <li>explore how search engines work and what influences results, evaluating search engines and using sources.</li> <li>learn about the threat from computer viruses and develop understanding of intellectual property and relate this to their own content.</li> </ul>	<ul style="list-style-type: none"> <li>develop safe and appropriate use of online technologies, considering what they can use and what information is shared about them.</li> <li>search more efficiently and investigate their digital footprints (or 'digital tattoos'), building safe and responsible use of online spaces.</li> </ul>
Information	<ul style="list-style-type: none"> <li>understand the difference between data and information.</li> <li>use sensors, data-loggers and other tools as part of their investigations.</li> <li>use branching and flat-file databases to enter, organise and search data, deriving information which they present in different forms.</li> <li>use spreadsheet software to create graphs and to explore number patterns.</li> </ul>	<ul style="list-style-type: none"> <li>develop expertise in spreadsheets, using both formulae and functions.</li> <li>import and analyse data collected on data-loggers.</li> <li>use conditional formatting to vary the format of cells and create tools for specific user needs.</li> <li>create models, identifying variables and using what-if modelling.</li> <li>investigate the concept of "big data" and its use in the world.</li> <li>review file types and protection.</li> <li>explore binary form and develop understanding of computer networks.</li> <li>create and search flat-file databases, developing accuracy and efficiency.</li> </ul>
Digital Communicati	<ul style="list-style-type: none"> <li>use online communication tools such as email and blogs to support collaborative learning, safely and respectfully.</li> <li>begin to investigate the technology used in digital communication networks.</li> </ul>	<ul style="list-style-type: none"> <li>create blogs for school projects, checking and uploading digital content.</li> <li>know the school's online safety rules and are proactive in encouraging other children to keep safe online.</li> </ul>
E Worlds	<ul style="list-style-type: none"> <li>produce programmed animations, using sequence, repeat and selection.</li> <li>explore simulations, investigating the structure and exploring how they might be programmed.</li> <li>begin to note that abstraction can simplify simulations.</li> <li>decompose tasks, creating and debug algorithms and understanding how algorithms support the programming process.</li> <li>write, test, debug and refine programs to achieve specific objectives, using sequence, repetition and procedures.</li> <li>explore selection in digital and natural systems.</li> </ul>	<ul style="list-style-type: none"> <li>investigate automated systems in the wider world and the use of sensors within them.</li> <li>consider natural systems and use abstraction to represent them. They create, test, debug and refine algorithms, pseudocode and the related programs using sequence, selection, repetition and variables.</li> <li>program physical devices, controlling inputs and outputs, relating to their study of automated systems.</li> <li>use programming languages to create their own sound clips.</li> </ul>
Online Safety	The strands outlined below are introduced, discussed and explored. Self-image, online reputation, online bullying, managing online information, health, wellbeing and lifestyles, privacy and security, copyright and ownership]	The strands outlined below are built upon in coverage, complexity and age appropriate content. Self-image, online reputation, online bullying, managing online information, health, wellbeing and lifestyles, privacy and security, copyright and ownership

# Programming



# Online Safety

The framework focuses on eight strands. Each strand has specific objectives that gradually progress to empower, build resilience and effect a positive culture change. By the end of year 6 safe, informed and appropriate long term behaviours are developed.



## Self-image and identity

This strand explores the differences between online and offline identity beginning with self-awareness, shaping online identities and how media impacts on gender and stereotypes. It identifies effective routes for reporting and support and explores the impact of online technologies on self-image and behaviour.



## Online relationships

This strand explores how technology shapes communication styles and identifies strategies for positive relationships in online communities. It offers opportunities to discuss relationships and behaviours that may lead to harm and how positive online interaction can empower and amplify voice.



## Managing online information

This strand explores how online information is found, viewed and interpreted. It offers strategies for effective searching, critical evaluation and ethical publishing.



## Health, well-being and lifestyle

This strand explores the impact that technology has on health, well-being and lifestyle. It also includes understanding negative behaviours and issues amplified and sustained by online technologies and the strategies for dealing with them.



## Online reputation

This strand explores the concept of reputation and how others may use online information to make judgements. It offers opportunities to develop strategies to manage personal digital content effectively and capitalise on technology's capacity to create effective positive profiles.



## Online bullying

This strand explores bullying and other online aggression and how technology impacts those issues. It offers strategies for effective reporting and intervention and considers how bullying and other aggressive behaviour relates to legislation.



## Privacy and security

This strand explores how personal online information can be used, stored, processed and shared. It offers both behavioural and technical strategies to limit impact on privacy and protect data and systems against compromise.



## Copyright and ownership

This strand explores the concept of ownership of online content. It explores strategies for protecting personal content and crediting the rights of others as well as addressing potential consequences of illegal access, download and distribution.