







## Challenge, Equality & Opportunity

### Computing Curriculum

#### Whole School Curriculum Intent:

<i>We can build knowledge and skills</i>	<i>We are creative</i>	<i>We are resilient</i>	<i>We understand ourselves and each Other</i>
<p>We strive for all of our children to have competency in the basic skills of reading, writing, maths and communication to underpin their learning, give them access to the broader curriculum and build their confidence as learners.</p> <p>We want our children to know more, remember more and be able to do more as a result of every learning experience across the curriculum.</p> 	<p>We want our children to be creative in their thinking so that they use their knowledge and skills to solve problems and create new knowledge, skills, thoughts and objects which give them enjoyment and inspire them to take their learning further.</p> 	<p>We need our children to develop independence and resilience so that they are able to grow as thinkers and learners.</p> 	<p>We aim for our children to develop empathy, awareness, respect and tolerance in-keeping with the school's No Outsiders values.</p> <p>We also want all of our children to understand themselves and be ready for the next steps in their education and the wider world.</p> 
<i>What does this look like?</i>			
<p>Achieve well in reading, writing and communication, including being at the age related expectation in early reading and phonics.</p> <p>Can build on previous learning.</p> <p>Can access new learning experiences.</p> <p>Value and enjoy success in the core subjects.</p> <p>Choose reading and use reading effectively.</p> <p>Apply maths, reading, writing and communication across the curriculum.</p>	<p>Reflect, adapt and develop ideas.</p> <p>Explore concepts.</p> <p>Make links across the curriculum.</p> <p>Ask questions and are curious.</p> <p>Use initiative.</p> <p>Hypothesise and generate ideas</p> <p>Communicate learning.</p> <p>Direct own learning through range of skills.</p> <p>Can argue and use evidence.</p>	<p>Bounce back and try again.</p> <p>Try new things and take risks.</p> <p>Manage their own things, time and learning as appropriate.</p> <p>Engage with extra-curricular activities.</p> <p>Solve problems through perseverance.</p> <p>Work towards a goal.</p>	<p>Listen to others.</p> <p>Can work in a group and cooperate with others.</p> <p>Assess own success and learning.</p> <p>Take turns and are patient.</p> <p>Use manners and are polite in interactions with everyone.</p> <p>Can manage emotions and support others.</p> <p>Show respect.</p> <p>Are kind and begin to show compassion.</p> <p>Can follow the Golden Rules.</p> <p>Can express themselves.</p>

## Computing Intent

### *We can build knowledge and skills*

We provide a computing curriculum that is ambitious and encourages critical thinking.

Children learn about the three main strands of the computing curriculum; Computer Science, Digital Literacy and Digital Citizenship, and develop an understanding of the nature and purpose of their digital world and how it effects their lives.

We teach new concepts by first unpacking complex terms and ideas, exploring these ideas in unplugged and familiar contexts, then repacking this new understanding into the original concept. This approach helps pupils develop a secure understanding of complex concepts.

Children develop a deepening knowledge of how computers and their systems work and how they are designed.

The curriculum is planned and taught to embed and develop key life skills, so that children can become effective problem solvers.

### *We are Creative*

We enrich children's experiences by providing children with opportunities to work practically with physical computing resources such as bee bots and Micro:bits.

Children discuss their computing experiences and thinking in each lesson.

Children are provided with opportunities to design, test and evaluate algorithms and presentations.

We use project-based learning activities to provide pupils with the opportunity to apply and consolidate their knowledge and understanding.

Children are provided with opportunities to use a variety of apps and programmes to express their thinking and learning.

### *We are Resilient*

Children use a wide vocabulary of appropriate and accurate computing terms.

We are confident to tinker with new technology and programmes, try new things and solve problems when programmes and technology do not work.

Children ask and answer questions with confidence, drawing on computing knowledge.

### *We Understand Ourselves and Each Other*

Children develop their understanding of the world by putting themselves at the centre of their digital world.

We work collaboratively to develop computing skills, develop communication and critical thinking skills.

Children understand how to be a competent and responsible 'digital citizen'.

## Computing Implementation

We follow the National Curriculum Computing Programmes of Study in Key Stage One and Two. Computing knowledge and skills are taught progressively. Our computing curriculum is designed to address the three main strands of the computing curriculum and develop an understanding of the nature and purpose of the digital world and how it effects our lives.

### Progression in Computing

	R	Year 1	Year 2	Year 3	Year 4
<b>Knowledge</b>					
<b>Computer Science</b>	Develop an awareness of algorithms through the characteristics of effective learning.	Understand that an algorithm is a set of instructions used to solve a problem or achieve an objective.	Understand what algorithms are and how they are implemented as programs on digital devices.	Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems.	Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems.
<b>Algorithms</b>	Playing and exploring – engagement – moving robots following instructions, exploring how objects/characters travel.	Know that an algorithm is written for a computer is called a program.	Understand that programs execute by following precise and unambiguous instructions.	Solve problems by decomposing programs into smaller parts.	Solve problems by decomposing them into smaller parts.
<b>Computational thinking</b>	Active Learning – Put instructions into order practically, following instructions and programming toys.	Use logical reasoning to predict the behaviour of simple programs.	Use logical reasoning to predict the behaviour of simple programs.	Use sequence, selection and repetition in programs; work with variables and various forms of input and output.	Use sequence, selection and repetition in programs; work with variables and various forms of input and output.
<b>Systems and data</b>	Creating and Thinking Critically - Predicting outcomes, matching symbols to instructions/grids.	Children can explain ways in which different technology can help us.	Use logical reasoning to predict the behaviour of simple programs.	Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.	Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.
				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.	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.

<b>Information Technology</b>		<p>Understand that technology can be used to purposefully create, organise, store, manipulate and retrieve digital content.</p> <p>Understand that we can use apps to develop presentation and creativity skills.</p>	<p>Understand that technology can be used to create, organise, store, manipulate and retrieve digital content as well as recognise common uses of information technology beyond school.</p>	<p>Understand how search technologies are used effectively, appreciate how results are selected and ranked, and understand how to be discerning in evaluating digital content.</p> <p>Understand how to use new apps to present and create digital media and presentations.</p>	<p>Understand how to select, use and combine a variety of software (including internet services) on a range of digital devices (laptops/iPads) to design and create a range of programs, systems and content that accomplish given goals. This includes collecting, analysing, evaluating and presenting data and information.</p>
<b>Digital Literacy</b>  <b>SWGfL Project EVOLVE</b>	<p>Understand some uses of technology for communication.</p> <p>Understand that there are some rules we need to follow to keep us safe online.</p>	<p>Understand the different methods of communication (e.g. email, online forums etc).</p> <p>Know that websites sometimes include pop-ups that take them away from the main site.</p> <p>Begin to evaluate websites and know that everything on the internet is not true.</p> <p>Know that it is not always possible to copy some text and pictures from the internet.</p> <p>Know that personal information should not be shared online.</p> <p>Know they must tell a trusted adult immediately if anyone tries to meet them via the internet.</p>	<p>Know that personal information should not be shared online.</p> <p>Know the difference between email and communication systems such as blogs and wikis.</p> <p>Know that bookmarking is a way to find safe sites again quickly.</p> <p>Know they must tell a trusted adult immediately if anyone tries to meet them via the internet.</p>	<p>Understand the need for rules to keep them safe when exchanging learning and ideas online.</p> <p>Recognise that information on the internet may not be accurate or reliable and may be used for bores, manipulation or persuasion.</p> <p>Understand that the internet contains fact, fiction and opinion and begin to distinguish between them.</p> <p>Understand the need to keep personal information and passwords private.</p> <p>Understand that if they make personal information available online it may be seen and used by others.</p> <p>Know how to respond if asked for personal information or feel unsafe about content of a message.</p> <p>Recognise that cyber bullying is unacceptable and will be sanctioned in</p>	<p>Use strategies to verify information, e.g. cross-checking</p> <p>Understand the need for caution when using an internet search for images and what to do if they find an unsuitable image</p> <p>Understand that copyright exists on most digital images, video and recorded music.</p> <p>Know difference between online communication tools used in school and those used at home.</p> <p>Understand the need to develop an alias for some public online use.</p> <p>Understand that the outcome of internet searches at home may be different than at school.</p>

				<p>line with the school's policy.</p> <p>Know how to report an incident of cyber bullying.</p>	
<b>Skills</b>					
<b>Computer Science</b>	<p>Children will give verbal instructions e.g. to tell a friend how to practically move elements or simple recipe instructions.</p> <p>Children will be able to spot when an algorithm doesn't work and spot the error.</p>	<p>Children can work out what is wrong with a simple algorithm when the steps are out of order.</p> <p>Children can write their own simple algorithm.</p> <p>When looking at a program, children can read code one line at a time and predict what will happen.</p>	<p>Children can explain that an algorithm is a set of instructions to complete a task.</p> <p>Children show an awareness of the need to be precise with their algorithms. They can identify and debug errors in algorithms.</p> <p>They can design, test and successfully run an algorithm on a number of applications and devices.</p> <p>Children use logic to identify and make attempts to debug. They can plan and predict an intended outcome.</p>	<p>Read, design, write and debug a program to achieve a specific goal.</p> <p>Experiment with timers to achieve repetition effects in their programs.</p> <p>Make good attempts to 'step through' more complex code in order to identify errors in algorithms and can correct this.</p> <p>Use a laptop to view data in different formats.</p>	<p>Read, design, write and debug a program using repetition to control a specific circuit.</p> <p>Plan and run a program of simple commands incorporating repetition.</p> <p>Use decomposition to ensure that programs follow a precise sequence and identify ways of improving the code.</p>
<b>Information Technology</b>	<p>Children will be able to use the iPads to open and close apps and lock the iPad.</p> <p>They will experiment with the camera and photo albums apps and know how to take a photo in portrait and landscape and view an existing photo.</p> <p>Children will be able to use the camera</p>	<p>Children will be able to sign in and out of the Seesaw app.</p> <p>Uploads documents to seesaw from the camera roll (photo, video).</p> <p>Using the drawing function on Seesaw, children will experiment with brush size, colour and other tools to achieve desired effects.</p> <p>Children will use pic collage or other apps to</p>	<p>Children will be able to search for apps quickly by pulling down the home screen.</p> <p>Children will be able to use the book creator app to write and recognise that text size and colour can be changed.</p> <p>They will also be able to recognise that the + symbol</p>	<p>Children will be able to use the safari search bar to find a given website.</p> <p>Children will be able to use the reader function to remove adverts and search for information.</p> <p>Collect, analyse, evaluate and present data and information using a selection of software.</p>	<p>Make informed software choices when presenting information and data.</p> <p>Create linked content using a range of software.</p> <p>Share digital content within their school community.</p> <p>Create a lengthy presentation that moves from slide to</p>

	app to scan QR codes.	<p>write and recognise that text size and colour can be changed.</p> <p>Record pupils' voices as a voice over on Seesaw to narrate work.</p>	<p>will add content to a piece of work.</p> <p>Word process a piece of text.</p> <p>Highlight text to change its format (B, <u>U</u>, I)</p> <p>Find information on a given website.</p>	<p>Create a presentation that moves from slide to slide and is aimed at a specific audience.</p>	<p>slide and is aimed at a specific audience.</p> <p>Insert sound recordings into a multi media presentation.</p> <p>Manipulate text, underline text, centre text, change font and size and save text to a folder.</p>
<b>Digital Literacy</b>	<p>Follow the school's safer internet rules.</p> <p>Follow the TAG approach if they are ever unsure when using iPads in school.</p>	<p>Follow the school's safer internet rules.</p> <p>Use the search engines agreed by the school.</p> <p>Act if they find something inappropriate online or something they are unsure of (including identifying people who can help; minimising screen; online reporting using school system etc).</p> <p>Use the internet for learning and communicating with others, making choices when navigating through sites.</p> <p>Recognise advertising on websites and learn to ignore it.</p> <p>Use a password to access the secure network.</p>	<p>Follow the school's safer internet rules.</p> <p>Use the search engines agreed by the school.</p> <p>Act if they find something inappropriate online or something they are unsure of (including identifying people who can help; minimising screen; online reporting using school system etc).</p> <p>Use the internet for learning and communicating with others, making choices when navigating through sites.</p> <p>Recognise advertising on websites and learn to ignore it.</p> <p>Use a password to access the secure network.</p>	<p>Follow the school's safer internet rules.</p> <p>Recognise the difference between the work of others which has been copied (plagiarism) and re-structuring and re-presenting materials in ways which are unique and new.</p> <p>Begin to identify when emails should not be opened and when an attachment may not be safe.</p> <p>Explain how to use email safely.</p> <p>Use different search engines.</p>	<p>Follow the school's safer internet rules.</p> <p>Recognise the difference between the work of others which has been copied (plagiarism) and re-structuring and re-presenting materials in ways which are unique and new.</p> <p>Begin to identify when emails should not be opened and when an attachment may not be safe.</p> <p>Explain how to use email safely.</p> <p>Use different search engines.</p>

**Building on previous knowledge and skills**

<b>Computer Science</b>		<p>Build on the work of EYFS by exploring computational thinking and everyday contexts. For example:</p> <ul style="list-style-type: none"> <li>-How to build a duplo model</li> <li>-How to get changed for PE</li> <li>-How to make a sandwich</li> </ul>	Building on the work of Year One, children should be able to turn their algorithms into programs such as inputting algorithms into beebots and using the Scratch Jnr app to design, test and run a simple algorithm	Building on the work of Year Two, children should be able to develop more complex algorithms and programs using sequencing. Children can use the scratch Jnr app to design travelling animations and quizzes	Building on the work of Year Three, children will be able to add challenge by adding repetition and repeated sequences in programs.
<b>Information Technology</b>		Building on knowledge from EYFS children should be confident and competent in using the camera and photo album apps on the iPads. They will understand how to open and close apps on the iPad and lock the iPad.	Building on knowledge from Year One, the children will have had experience in using the Pic Collage app and drawing functions on the Seesaw app.	Building on knowledge from Year Two, the children will have had experience using the book creator, pic collage, seesaw and camera apps.	Building on knowledge from Year Three, children will be able to competently use apps such as book creator and seesaw. They will build on these skills through the book creator skills progression. They will also use their experience of Microsoft Office, create presentations linked to topic work.

## Vocabulary

<b>Computer Science</b>	<p>Instructions</p> <p>Forward</p> <p>Backwards</p> <p>Left</p> <p>Right</p> <p>Move</p>	<p>Algorithm</p> <p>Debug</p> <p>Instructions</p> <p>Program</p> <p>Computer</p> <p>Predict</p> <p>Code</p> <p>Unplugged</p>	<p>Algorithm</p> <p>Debug</p> <p>Instructions</p> <p>Program</p> <p>Computer</p> <p>Predict</p> <p>Code</p> <p>Unplugged</p> <p>Logic</p> <p>Run</p> <p>Command</p> <p>Directional language</p>	<p>Physical system</p> <p>Control</p> <p>Debug</p> <p>Programme</p> <p>Sequence</p> <p>Input</p> <p>Output</p> <p>Detect</p> <p>Algorithm</p> <p>Network</p> <p>Internet</p> <p>Pattern</p> <p>Procedure</p> <p>Repetition</p>	<p>Code</p> <p>Structure</p> <p>Repeat</p> <p>Debug</p> <p>Program</p> <p>Logical</p> <p>Design</p> <p>Manipulate</p> <p>Variables</p> <p>Input</p> <p>Input device</p> <p>Output</p> <p>Error</p> <p>Loop</p> <p>Outcome</p> <p>Component</p> <p>Hardware</p> <p>Network</p>
<b>Information Technology</b>	<p>App</p> <p>Lock</p> <p>Swipe</p> <p>Camera</p>	<p>Technology</p> <p>Digital</p> <p>Camera</p> <p>App</p> <p>Lock</p> <p>Edit</p> <p>Store</p> <p>Retrieve</p>	<p>Technology</p> <p>Digital</p> <p>Camera</p> <p>App</p> <p>Lock</p> <p>Edit</p> <p>Store</p> <p>Retrieve</p>	<p>Computer network</p> <p>Computer system</p> <p>Search</p> <p>Software</p> <p>Retrieve</p> <p>Analyse</p> <p>Evaluate</p> <p>Collect</p>	<p>Search engine</p> <p>Webpage</p> <p>Digital solution</p> <p>Software</p> <p>Information</p> <p>Data</p> <p>Adverts</p> <p>Content</p>



	Technology	Instructions	Instructions Text Resize Format Data	Evaluate Software Data Digital device Hyperlink Server Website	Data set Digital device Hyperlink Server Web browser Web page
<b>Digital Literacy</b>	Online Offline Help technology communicate belong ( to me) password	Online Offline information Trust Emotions Technology Considerate Risks Consent Permission Password private protect title copy	information Trust Emotions Technology Considerate Risks Consent Permission Password private protect title copy Consent permission search engine navigate device ownership	Image Identity Represent Representations Interact Perceive Modified Altered Content Permission Respect Impersonate Persuade Inappropriate Restrictions Persuade Sources	Online community Consequences Private Digital personality Reputation Anonymity Concern Accuracy Stereotype Hoax Misinformation Terms and conditions

More information about the relationship between the curriculum and the school's plans can be found in the Long Term Plan for Computing.

### Delivery of the Computing Curriculum:

Computing is taught as part of continuous provision and as discrete lessons in Reception.

In KS1 and 2, children will focus on a strand of the Computing Curriculum each term. Each element will consist of 5 or 6 lessons which are usually taught discretely. It can be taught weekly across the half terms or some units can be delivered on a Computing focus day or across several afternoons. We have built in flexibility to ensure that Computing is not 'squeezed' out of the busy curriculum and it is taught in the most appropriate way for each year group or class.

Please see Long Term Plan for Computing for more information.

Computing is not usually planned to match other topics in the curriculum but the units can be adapted where natural links form between Computing and other subjects, for example when presenting information or data. Teachers meet with the Computing lead to discuss this and ensure that any adaptations still include coverage of the Havannah Computing Curriculum.

### A Typical Computing Lesson at Havannah First School

**Each KS1 and 2 lesson typically follows the following format:**

1. Fast recall (retrieval) of the previous lesson's content (knowledge and skills).
2. Introduction to the computing element and knowledge and skills in the context of the question being investigated during this lesson. (This may involve use of video or teacher-led input.)
3. Children practising and exploring (tinkering with new equipment and software) as they apply and further develop their knowledge and skills in order to formulate an answer to the investigative question.



4. Evaluation learning and formulation of an answer to the investigative question set at the beginning of the lesson.

Lesson structures can vary to suit the content and the objective.

Children will largely work within the classroom setting, with Computing specialists (GEM Education) working with each class at least once a year.

Computing evidence saved onto individual Seesaw accounts will keep an ongoing record of children's learning and progress. Children will be encouraged to look back at their own prior learning and recall their learning, being encouraged to use computing specific vocabulary.

Vocabulary is built upon and used in each lesson. Expectations of the vocabulary that is expected to be learned and used is also included as part of the Long Term Plan.

### SOURCES OF SUPPORT, INFORMATION AND GUIDANCE FOR TEACHERS

<https://www.bbc.co.uk/bitesize/subjects/zyhbwmn>

<https://teachcomputing.org/curriculum>

<https://www.barefootcomputing.org/>

<https://microbit.org/teach/lessons/?filters=age-07-11yrs>

<https://www.stem.org.uk/primary>

[https://www.thinkuknow.co.uk/4\\_7/](https://www.thinkuknow.co.uk/4_7/)

<https://www.projectevolve.co.uk>



**Barefoot**  
Computing at School

