



## Long Term Scheme of Work for Computing

**Curriculum Intent:** At Dashwood, our computing curriculum provides children with computing science and information technology skills in order to be digitally literate and change the world.

**Whole School thread:** i) Can understand and apply the fundamental principles and concepts of computer science including data and algorithms  
ii) Can evaluate and apply information technology analytically to solve problems    iii) To develop competency and confidence to connect and communicate with others safely and responsibly

Year group	‘Need to knows’ <i>Including: safety and programming</i>	Skills	Key Vocabulary
N	<p>i) <u>Can understand and apply the fundamental principles and concepts of computer science including data and algorithms</u></p> <p>ii) <u>Can evaluate and apply information technology analytically to solve problems</u></p> <p>iii) <u>To develop competency and confidence to connect and communicate with others safely and responsibly</u></p> <p>→ Know that machines are operated by an on/off switch/button i)</p> <p>→ Know that some machines have more than one button that operates the machine in a variety of ways e.g turning a knob, pulling a string ii)</p>	<p>→ I show curiosity and seek to acquire basic skills in turning on and operating some ICT equipment.</p> <p>→ I can operate mechanical toys, e.g. turns the knob on a wind-up toy or pulls back on a friction car.</p>	<p>pull wind up turn button</p>

R	<p>i) <u>Can understand and apply the fundamental principles and concepts of computer science including data and algorithms</u></p> <p>ii) <u>Can evaluate and apply information technology analytically to solve problems</u></p> <p>iii) <u>To develop competency and confidence to connect and communicate with others safely and responsibly</u></p> <ul style="list-style-type: none"> <li>→ Know a range of technology that is used in their home e.g computers, phones, kitchen equipment (i&amp;iii)</li> <li>→ Know how to turn a computer/ CD player on i)</li> <li>→ Know that information can be retrieved from computers i)</li> <li>→ To know about a variety of computer programs eg scratch, beebots i)</li> <li>→ To know safe games to play on e.g youtube kids iii)</li> <li>→ To know who to go to for help if they are worried iii)</li> </ul>	<ul style="list-style-type: none"> <li>→ I can operate simple equipment, e.g. turns on CD player and uses remote control.</li> <li>→ I show an interest in technological toys with knobs or pulleys, or real objects such as cameras or mobile phones.</li> <li>→ I can make toys work by pressing parts or lifting flaps to achieve effects such as sound, movements or new images.</li> <li>→ I can complete a simple program on a computer.</li> <li>→</li> <li>→ I can use ICT hardware to interact with age-appropriate computer software.</li> <li>→</li> <li>→ They select and use technology for particular purposes eg: to make objects 'work' and to retrieve information</li> </ul>	<p>Button On Off Beebots Computer device technology remote control camera mobile phone image</p>
1	<p>i) <u>Can understand and apply the fundamental principles and concepts of computer science including data and algorithms</u></p> <p>ii) <u>Can evaluate and apply information technology analytically to solve problems</u></p> <p>iii) <u>To develop competency and confidence to connect and communicate with others safely and responsibly</u></p> <p><u>Computer Science</u></p> <ul style="list-style-type: none"> <li>→ To know that computers are machines that respond to</li> </ul>	<p><u>Computer Science</u></p> <ul style="list-style-type: none"> <li>→ I can create a series of instructions.</li> <li>→ I can plan a journey for a programmable toy eg: Beebot, app.</li> </ul> <p><u>II</u></p> <ul style="list-style-type: none"> <li>→ I can use websites to find information at home and at school can save and retrieve digital content.</li> <li>→ I can use a keyboard to enter text.</li> </ul>	<p>Algorithm Sequences private personal search engine appropriate bullying cyber bullying</p>

	<p>a set of instructions. (i)</p> <ul style="list-style-type: none"> <li>→ To know that a computer programme is a collection of instructions to perform a specific task - known as an algorithm i)</li> </ul> <p>II</p> <ul style="list-style-type: none"> <li>→ To know that search engines are used to find websites and retrieve information. (ii)</li> <li>→ To know that digital devices can be used to collect different forms of media which can be shared and changed. (ii)</li> <li>→ To know you can sort and collect information using a computer i,ii)</li> <li>→ To know about computer programmes that can be used in art e.g to draw, change images etc i)</li> </ul> <p><u>Digital Literacy</u></p> <ul style="list-style-type: none"> <li>→ To know why it is important to use equipment safety and respectfully (iii)</li> <li>→ To know the importance of keeping personal information private. (iii)</li> <li>→ To Know where to go for help and support when they have concerns about content or contact on the internet or other online technologies. (iii)</li> </ul>	<ul style="list-style-type: none"> <li>→ I can use technology to collect information including photos, videos and sound.</li> <li>→ I can create a picture eg: using SeeSaw.</li> </ul> <p><u>Digital Literacy</u></p> <ul style="list-style-type: none"> <li>→ I can begin to tell an adult when something is worrying me online.</li> <li>→ I can begin to keep personal information private.</li> <li>→ I can begin to follow the school's e-safety rules.</li> <li>→ I can begin to use an internet search engine.</li> <li>→ I can begin to understand that some games and apps are not appropriate for me to play.</li> <li>→ I can begin to recognise what information is safe to put online and to know that things that are said online are still as hurtful as in real life and to recognise cyber-bullying.</li> </ul>	
2	<ul style="list-style-type: none"> <li>i) <u>Can understand and apply the fundamental principles and concepts of computer science including data and algorithms</u></li> <li>ii) <u>Can evaluate and apply information technology analytically to solve problems</u></li> <li>iii) <u>To develop competency and confidence to connect and communicate with others safely and responsibly</u></li> </ul> <p><u>Computer Science</u></p>	<p><u>Computing Science</u></p> <ul style="list-style-type: none"> <li>→ I can use a range of instructions e.g. direction, angles, turns.</li> <li>→ I can test and amend a set of instructions and talk about this as an algorithm.</li> <li>→ I can find errors and amend (debug).</li> <li>→ I can write a simple program and test it.</li> <li>→ I understand that programs require precise</li> </ul>	<p>instructions directions angles turns error navigate test</p>

- To know an algorithm is a set of instructions to makes something happen i)
- To know that programs are created to perform tasks that the computer needs to complete. i)
- To know that there will always be an outcome for each program. (i)

## IT

- To know the benefits of using technology and know that other people have created information that is used i)
- To recognise common uses of technology outside of school e.g kitchen equipment, televisions etc ii)
- To know how to produce documents to present information clearly i,ii)
- To know how to open and save documents ii)
- To know how orientate themselves around the keyboard e.g space bar and delete button ii)

## Digital Literacy

- To know the school and class e safety rules and know why technology should be used safely and respectfully (iii)
- To know the importance of keeping personal information safe iii)
- To know there are some games that are not appropriate to play as they can have content that is inappropriate iii)
- To know information that is safe and unsafe to put online and have an online footprint iii)
- To know that things said online are just as hurtful if they are said face to face iii)
- To know where to go for help and support when you

instructions.

## IT

- I can navigate the web to complete simple searches.
- I can choose different kinds of information that will be used in presenting my ideas eg: cameras, sound, graphs etc.
- I can use the keyboard to space, add and delete text for others to read.
- I can save and open files on the device I use.

## Digital Literacy

- I can safely use an internet search engine.
- I can tell an adult when something is worrying me online.
- I can keep personal information private.
- I can follow the school's e-safety rules.
- I can understand that some games and apps are not appropriate for me to play.
- I recognise what information is safe to put online and to know that things that are said online are still as hurtful as in real life and to recognise cyber-bullying. I will begin to this as my online footprint.

	<p>have concerns about content or contact on the internet or other online technologies (iii)</p> <p>→ To know how to use search engines safely to find information e.g typing in sensible and accurate information (iii)</p>		
3	<p>i) <u>Can understand and apply the fundamental principles and concepts of computer science including data and algorithms</u></p> <p>ii) <u>Can evaluate and apply information technology analytically to solve problems</u></p> <p>iii) <u>To develop competency and confidence to connect and communicate with others safely and responsibly</u></p> <p><u>Computer Science</u></p> <ul style="list-style-type: none"> <li>→ To know that programs are created to perform specific tasks that the computer needs to complete i)</li> <li>→ To know how to work out what algorithm is needed to specific tasks i)</li> <li>→ To know the series of steps needed to create an algorithm i)</li> <li>→ To know that errors can occur within programs (i)</li> <li>→ To know that errors can be resolved by debugging i)</li> </ul> <p><u>IT</u></p> <ul style="list-style-type: none"> <li>→ To know that there are a variety of ways of collecting and organising information and data i)</li> <li>→ To know that IT can be used to create different graphs that show data for different purposes across the curriculum. (ii)</li> <li>→ To know that text and graphics can be combined to</li> </ul>	<p><u>Computer Science</u></p> <ul style="list-style-type: none"> <li>→ I can design a sequence of instructions, including directional instructions eg. Beebot.</li> <li>→ I can describe an algorithm I will need for a specific task.</li> <li>→ I can keep testing my program and can recognise when I need to debug it.</li> <li>→ I can detect a problem in an algorithm which could result in unsuccessful programming.</li> </ul> <p><u>IT</u></p> <ul style="list-style-type: none"> <li>→ I can discuss the different ways that data can be organised.</li> <li>→ I can combine a mixture of text and graphics to share my ideas eg. SeeSaw.</li> <li>→ I can appropriate keyboard commands to amend text on my device including spellchecker.</li> <li>→ I can manipulate and improve both painted and digital images.</li> </ul> <p><u>Digital Literacy</u></p> <ul style="list-style-type: none"> <li>→ I can tell an adult when I am concerned online.</li> <li>→</li> </ul>	<p>Debugging graphics device spell checker manipulate error debug powerpoint data restrictions</p>

- share ideas in a different way ii)
- To know that documents can be produced to create graphs/photos/tables ii)
- To know how to use powerpoint to insert pictures/video and sound ii)
- To know how to manipulate and improve painted and digital images ii)
- To know how to use the spell checker and use the keyboard to amend texts i)
- To know a range of websites that will support learning ii)

Digital Literacy

- To know that it is important to keep my personal information private online e.g address/school/passwords etc iii)
- To know the risks of gaming online with friends e.g cyberbullying and stranger danger
- To know what games have age restrictions and the effects of playing violent games iii)
- To know that it is important what i put online is there forever and the consequences of this iii)
- To know the difference between safe and unsafe apps and games online iii)
- To know where to go for help e.g report button and informing adults iii)

- I can protect and keep personal information private.
- I can follow the school's e-safety rules.
- I am beginning to be aware that websites have safety features to report concerns if I see something inappropriate online.
- I can begin to understand why age restrictions are important for games.
- I can begin to understand the risks of socialising through gaming consoles including knowledge of cyber bullying and the risks.
- I can begin to understand that what I post online is there forever and can be seen online – this is my digital footprint.
- I can begin to know the difference between safe applications and apps and games online

<p>4</p>	<p>i) <u>Can understand and apply the fundamental principles and concepts of computer science including data and algorithms</u></p> <p>ii) <u>Can evaluate and apply information technology analytically to solve problems</u></p> <p>iii) <u>To develop competency and confidence to connect and communicate with others safely and responsibly</u></p> <p><u>Computer Science</u></p> <ul style="list-style-type: none"> <li>→ To know how to combine sequences of instructions and procedures to turn devices on and off or start and stop e.g a microbit i)</li> <li>→ To know that there are many reasons why a sequence will not work i)</li> <li>→ To know some debugging strategies to solve a problem e.g in Beebots Purplemash and Jam sandwich and Scratch i)</li> <li>→ To know that multiple programs/code can be used in conjunction to perform one outcome (E.g. A sound and a light would have to be programmed to create an intruder alarm. (i,ii)</li> </ul> <p><u>IT</u></p> <ul style="list-style-type: none"> <li>→ To know that computer networks have the potential to further revolutionise the way we live and work; both in the way we communicate and in the development of the 'Internet of things'. (ii)</li> <li>→ To know that there are useful ways to organise data using different programmes e.g excel to help to organise information i)</li> <li>→ To know that you can search specific information in order to evaluate results and draw conclusions e.g</li> </ul>	<p><u>Computer Science</u></p> <ul style="list-style-type: none"> <li>→ I can combine sequences of instructions and procedures to turn devices on and off (Microbit)</li> <li>→ I can use logical reasoning to solve an open ended problem by breaking it into smaller parts such as; making an accurate prediction and explaining why I believe something will happen (linked to programming eg: Purplemash</li> <li>→ I can recognise an error and de-bug a program independently eg: Beebots, Purplemash, Jam Sandwich</li> </ul> <p><u>IT</u></p> <ul style="list-style-type: none"> <li>→ I can create, modify and present a document, analyse it against a criteria (which includes adding hyperlinks) and then collaborate with my peers to modify and improve it.</li> <li>→ I can collect data in a database and sort and present it eg: in a graph/table (Excel)</li> <li>→ I can produce and upload a podcast/song/poetry/spoken word/news bulletin/radio show.</li> <li>→ I am confident to explore new media to extend what I can achieve</li> </ul> <p><u>Digital Literacy</u></p> <ul style="list-style-type: none"> <li>→ I can tell an adult when I am concerned online</li> <li>→ I can protect and keep personal information private</li> </ul>	<p>online footprint digital footprint cyber-bullying database podcast modify hyperlink</p>
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	<p>inserting hyperlinks ii)  → To Know how to collaborate and modify a document they have created to improve it and analysing and editing are crucial to this process. (ii,iii)  → To know that podcasts/radio/songs programmes can be used to communicate information ii)</p> <p><u>Digital Literacy</u></p> <p>→ To know why technology should be used safely and respectfully and to keep personal information private iii)  → To know where to go for help and support when they have concerns about content or contact on the internet or other online technologies. (iii)  → To know why age restrictions are important and where to go if they are uncomfortable with any content  → To know that socialising through gaming can bring risks including cyberbullying iii)</p>	<p>→ I can follow the school's e-safety rules</p> <p>→ I can understand why age restrictions are important on games</p> <p>→ I can understand the risks of socialising through gaming consoles including knowledge of cyber-bullying and the risks</p> <p>→ I can understand that what I post online is there forever and can be seen online – this is my digital footprint.</p>	
5	<p>i) <u>Can understand and apply the fundamental principles and concepts of computer science including data and algorithms</u></p> <p>ii) <u>Can evaluate and apply information technology analytically to solve problems</u></p> <p>iii) <u>To develop competency and confidence to connect and communicate with others safely and responsibly</u></p> <p><u>Computer Science</u></p> <p>→ To know the terms and functions a 'repetition,' 'if and then commands' and variables to refine and increase</p>	<p><u>Computer Science</u></p> <p>→ I can break down a problem into simple parts and design an algorithm for a specific outcome/program.</p> <p>→ I can change an input to a program to achieve a different output</p> <p>→ I can design algorithms that use repetition, if and then commands and a variable to refine and increase programming possibilities.</p> <p>→ I can use logical reasoning to detect and debug mistakes in a program.</p> <p><u>IT</u></p> <p>→ I can use spreadsheets and databases to collect and record data.</p>	<p>code  input  output  variable  commands  bias  logical reasoning  spreadsheets  database  CEOP</p>



- programming possibilities i)
- To know how to change an input into a program to achieve a different output i)
- To know how to design algorithms that use repetition, if and then commands and a variable to refine and increase programme possibilities i and ii)
- To know a variety of strategies to debug mistakes in a program ii)

## II

- To know what a spreadsheet and database is and know how they collect data i)
- To know that technology can be combined to create effects e.g text, photos and sound i)
- To know how to edit videos and image i)

### Digital Literacy

- To know why technology should be used safely and respectfully.iii)
- The need to keep personal information private. (iii)
- To know the reasons why it is important to protect personal information iii)
- To know how to access the CEOP button to report online abuse iii)
- To know that devices can be damaged from downloading certain programmes/games/content iii)
- To know that an online footprint remains forever and can effect future choices and opportunities iii)
- To know the important of using a mobile phone safety and know why it is important to have a pass code iii)
- To know that inappropriate use of apps and texting on mobile phones is cyberbullying iii)

- I can choose appropriate tools to collect data.
- I can select, use and combine the appropriate technology tools to create effects that will have an impact on others (using text, photo, sound and video editing tools).
- I can edit, review and improve my own and others' work.

### Digital Literacy

- I understand that you have to make choices when using technology and that not everything is true and/or safe.
- I can explain why I need to protect myself online and know to report concerns on a website (such as using the report abuse button/CEOP.)
- I am beginning to understand that I need to protect my computer/device from harm when downloading games/content.
- I am beginning to understand how the things I post online can affect others as it is there forever.
- I am beginning to know how to use a mobile phone safely.
- I know that when I communicate using a mobile phone, this can affect others.
- I am aware that when I communicate online I need to think about what I am posting/saying beforehand (links to cyber bullying.)

<p>6</p>	<p>i) <u>Can understand and apply the fundamental principles and concepts of computer science including data and algorithms</u></p> <p>ii) <u>Can evaluate and apply information technology analytically to solve problems</u></p> <p>iii) <u>To develop competency and confidence to connect and communicate with others safely and responsibly</u></p> <p><b>By year 6 all the knowledge will have been taught and will consolidate all skills within a project.</b></p>	<p><u>Computer Sciences</u></p> <ul style="list-style-type: none"> <li>→ I can explain and program each of the steps in an algorithm.</li> <li>→ I can deconstruct a problem into smaller steps, recognising similarities to solutions used before.</li> <li>→ I can evaluate the effectiveness and efficiency of an algorithm whilst testing it.</li> <li>→ I can recognise when I need to use a variable to achieve a required output.</li> <li>→ I can confidently design algorithms that use repetition, if and then commands and a variable to refine and increase programming possibilities.</li> <li>→ I can use logical reasoning to detect and correct errors in algorithms and programs.</li> </ul> <p><u>IT</u></p> <ul style="list-style-type: none"> <li>→ I can select the appropriate tool to collect data.</li> <li>→ I can combine a range of media, recognising the contribution of each.</li> <li>→ I can evaluate the effectiveness of my own and others work.</li> </ul> <p><u>Digital Literacy</u></p> <ul style="list-style-type: none"> <li>→ I can discuss how search results are selected and ranked.</li> <li>→ I can explain the consequences of sharing too much about myself online and can identify how to minimise these risks.</li> <li>→ I can explain why I need to check with an adult before downloading content from the internet.</li> <li>→ I understand how content downloaded could contain viruses.</li> <li>→ I understand how the things I post online can affect others as it is there forever.</li> <li>→ I understand how to communicate using a mobile phone in a safe and appropriate way.</li> <li>→ I am considerate when I communicate online and</li> </ul>	<p>deconstruct analyse evaluate logical reasoning ranking</p>
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		fully understand that I am responsible for the content on my device and what I say/post.	
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