

# COMPUTING

## Curriculum Map

### Skills and Knowledge Progression



**We align our topics and units of study with the National Curriculum; however, we enrich our provision with Oakfield’s learning experiences that enable pupils to enjoy learning for life.**

#### **Purpose of study**

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.

End points for lessons will be shared with pupils and they will be encouraged to self-assess against differentiated success criteria.

Pupils will be introduced to and encouraged to use specialist technical language which will be given to them at the start of a lesson or topic.

#### **Pupils should be taught to:**

- design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and 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
- use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
- 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
- use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>
<b>Topics Studied</b>	Word processing skills Touch Typing	Scratch Word/PowerPoint skills	Powerpoint: Using shape tools and layering options.	Web site design: Google sites Audacity/ Sound trap

	<p>Animation using Stick Pivot Software.          Email skills          Block Coding: Rapid Router          Using digital cameras and manipulating image using Multimedia presentation software eg. PowerPoint          Internet Safety.</p>	<p>Coding machines; Lego WeDo          Using Audacity/Sound trap for Adverts          Excel: Creating simple function machines using formula.          Internet Safety.</p>	<p>Coding: Kodu Game Lab.          Creating Instructions using publishing Software.          Analyse data using Excel          Green screen filming.          Web site design: Google sites          App builder: Microsoft Powerapps          Internet Safety.</p>	<p>Using animation Software to create stop motion films.          Scratch.          Video software: Creating leavers videos          Green Screen filming          App builder: Microsoft Powerapps          Internet Safety.</p>
Computer Science	<p><b>Skills:</b>          Pupils create programs to accomplish specific goals:</p> <ul style="list-style-type: none"> <li>• using an increasing range of digital devices and applications.</li> <li>• exploring and understanding the impact of changing instructions.</li> <li>• using sequence and repetition</li> <li>• decomposing problems both on and off screen</li> <li>• using the principles of logical reasoning in order to resolve problems.</li> </ul>	<p><b>Skills:</b>          Pupils create and debug programs.</p> <p>They can:</p> <ul style="list-style-type: none"> <li>• use sequence and repetition.</li> <li>• refine algorithms to improve efficiency</li> <li>• control or simulate physical systems</li> </ul> <p>Pupils begin to explore and notice the similarities and differences between programming languages and use this knowledge to help them create and debug programs efficiently.</p>	<p><b>Skills:</b>          Pupils create, deconstruct and refine programs to accomplish specific goals.</p> <p>They can:</p> <ul style="list-style-type: none"> <li>• improve efficiency</li> <li>• use selection within programs</li> <li>• use a range of simple inputs and outputs to control or simulate physical systems.</li> </ul> <p>Pupils use logical reasoning to explain how some algorithms work and to detect and correct errors in programs. They independently employ strategies to solve problems.</p>	<p><b>Skills:</b>          Pupils deconstruct, improve and create programs including:</p> <ul style="list-style-type: none"> <li>• using selection and working with variables.</li> <li>• using the principles of logical reasoning</li> <li>• challenging themselves by making simple programs increasingly complex and employ a variety of strategies to solve problems.</li> </ul> <p>Pupils can explain why they have structured algorithms as they have and describe the effect this has on a program</p>
Digital Literacy <i>Office Suite Skills/ Publishing Skills</i>	<p><b>Skills:</b>  <b>Using Word, Pupils....</b></p> <ul style="list-style-type: none"> <li>• Can centre and underline text</li> <li>• Can change the size , colour and style of font</li> <li>• Can use the mouse to highlight text.</li> <li>• Can amend text by over-typing and then save their work.</li> </ul>	<p><b>Skills:</b>  <b>Using Word, Pupils....</b></p> <ul style="list-style-type: none"> <li>• Can amend text using find and replace.</li> <li>• Can insert a table, split and merge cells.</li> </ul> <p><b>Using PowerPoint, Pupils...</b></p> <ul style="list-style-type: none"> <li>• Can use animations tool to move objects/shapes pictures</li> </ul>	<p><b>Skills:</b>  <b>Using PowerPoint, Pupils...</b></p> <ul style="list-style-type: none"> <li>• Can select object ,right click and insert hyperlink to website.</li> <li>• Can use hyperlink tool to link to another slide in presentation.</li> </ul> <p><b>Using Excel, Pupils...</b></p>	<p><b>Skills:</b>          Pupils are confident, capable and creative users of technology, selecting and making effective use of digital resources and devices for purpose and effect. They create digital content, thinking carefully about aesthetics,</p>

	<ul style="list-style-type: none"> <li>• Can combine text and graphics (clip art or from saved file/ internet).</li> <li>• Can right click on picture to manipulate its size/ colour properties.</li> <li>• Can use the shift key to produce punctuation marks such as exclamation marks.</li> <li>• Can use bold and italic and other font effects (size, colour, and style) appropriately.</li> <li>• Can use alignment effects, e.g. right and left justifies.</li> <li>• Can use cut and paste to re-order text.</li> <li>• Can use a spell checker.</li> </ul> <p><b>Using PowerPoint, Pupils...</b></p> <ul style="list-style-type: none"> <li>• Can insert text box</li> <li>• Can insert new slide</li> <li>• Can insert Word Art, change style colour and font</li> <li>• Can use Word Art format tool bar to Warp text</li> <li>• Can insert shapes; resize, colour, order and group/ungroup.</li> <li>• Can insert picture from file/ clip art or copy/paste.</li> <li>• Can resize picture, order, use artistic effects, corrections, color , remove background and picture styles.</li> </ul> <p><b>Using Excel, Pupils...</b></p> <ul style="list-style-type: none"> <li>• Can insert simple formula eg =6+2</li> <li>• Can use auto sum tool to add several cells.</li> </ul>	<ul style="list-style-type: none"> <li>• Can use Transitions between slides</li> <li>• Can use advance slide tool, using timings.</li> </ul> <p><b>Using Excel, Pupils...</b></p> <ul style="list-style-type: none"> <li>• Can create formula to add, subtract, divide or multiply 2 or more cells.</li> </ul>	<ul style="list-style-type: none"> <li>• Can create a table of data, the use chart tools to create chart.</li> <li>• Can create a function machine (use formula) to solve problems.</li> </ul>	<p>functionality and impact on the user.</p>
<p>Digital Literacy <i>Multimedia</i></p>	<p><b>Skills:</b></p> <p><b>Pupils...</b></p> <ul style="list-style-type: none"> <li>• Can create a simple animation that uses stop motion principles.</li> </ul>	<p><b>Skills:</b></p> <p><b>Pupils...</b></p> <ul style="list-style-type: none"> <li>• Can import audio.</li> <li>• Can cut and edit audio tracks.</li> <li>• Can insert a sound effect</li> </ul>	<p><b>Skills:</b></p> <p><b>Pupils...</b></p> <ul style="list-style-type: none"> <li>• Can use effect tools to change volume, pitch, fade in and fade out.</li> </ul>	<p><b>Skills:</b></p> <p><b>Pupils...</b></p> <ul style="list-style-type: none"> <li>• Can use video editing suite software to create a short film.</li> <li>• Can trim video clips</li> </ul>

			<ul style="list-style-type: none"> <li>• Can embed background music or SFX alongside vocals.</li> </ul> <p>Can use APP building or Web Design software to:</p> <ul style="list-style-type: none"> <li>• Insert screens</li> <li>• Upload images</li> <li>• Code buttons that link to other screens.</li> </ul>	<ul style="list-style-type: none"> <li>• Can merge clips together.</li> <li>• Can manipulate the audio of both foreground and background.</li> <li>• Can add SFX and transitions</li> <li>• Can add opening and ending credits.</li> </ul> <p>Can use APP building or Web Design software to:</p> <ul style="list-style-type: none"> <li>• Create scrolling screens</li> <li>• Incorporate audio and video</li> </ul>
Information Technology <i>General Skills</i>	<p><b>Skills:</b></p> <p><b>Pupils...</b></p> <ul style="list-style-type: none"> <li>• Can turn on, logon and then shutdown laptop.</li> <li>• Can save work in the correct location on the network and open to make changes.</li> <li>• Can sign on to use a single sign in package to access a variety of online software.</li> <li>• Can safely sign out of online software.</li> </ul>			
Internet Safety	<p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Pupils learn how to communicate effectively by email, taking into account the purpose and audience of their message, and the tone they want to convey.</li> </ul> <p><b>Knowledge:</b></p> <ul style="list-style-type: none"> <li>• Pupils explore reasons why people use passwords, learn the benefits of using passwords, and discover strategies for creating and keeping strong, secure passwords.</li> <li>• Pupils explore the concept that people can</li> </ul>	<p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Pupils learn strategies to increase the accuracy of their keyword searches and make inferences about the effectiveness of the strategies.</li> </ul> <p><b>Knowledge:</b></p> <ul style="list-style-type: none"> <li>• Pupils explore what it means to be responsible to and respectful of their offline and online communities as a way to learn how to be good digital citizens</li> <li>• Pupils explore how can they protect themselves from online identity theft? Pupils think critically about the</li> </ul>	<p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Pupils learn how to create secure passwords in order to protect their private information and accounts online.</li> <li>• Pupils work together to outline common expectations in order to build a strong digital citizenship community. Each member of the class signs a We the Digital Citizens Pledge.</li> </ul> <p><b>Knowledge:</b></p> <ul style="list-style-type: none"> <li>• Pupils learn what spam is, the forms it takes, and then identify strategies for dealing with it.</li> </ul>	<p><b>Knowledge:</b></p> <ul style="list-style-type: none"> <li>• Pupils learn that the Internet is a great place to develop rewarding relationships. But they also learn not to reveal private information to a person they know only online.</li> <li>• Pupils explore Spider-Man's motto, "with great power comes great responsibility" through the lens of digital citizenship. They create comic strips show a digital superhero who witnesses an act of poor digital citizenship, and then helps resolve it.</li> </ul>

	<p>connect with one another through the Internet. They understand how the ability for people to communicate online can unite a community.</p> <ul style="list-style-type: none"> <li>• Pupils examine product websites and understand that the purpose of the site is to encourage buying the product. Pupils learn methods used to promote products on these sites.</li> <li>• Pupils explore the similarities and differences between in-person and online communications, and then learn how to write clear and respectful messages.</li> </ul>	<p>information they share online.</p> <ul style="list-style-type: none"> <li>• Pupils consider that they may get online messages from other kids that can make them feel angry, hurt, sad, or fearful. Pupils identify actions that will make them Upstanders in the face of cyberbullying.</li> <li>• Pupils learn that copying the work of others and presenting it as one's own is called plagiarism. They also learn about when and how it's ok to use the work of others.</li> </ul>	<ul style="list-style-type: none"> <li>• Pupils reflect on the importance of citing all sources when they do research. They then learn how to write bibliographical citations for online sources.</li> <li>• Pupils learn how photos can be altered digitally. They will consider the creative upsides of photo alteration, as well as its power to distort our perceptions of beauty and health.</li> </ul>	<ul style="list-style-type: none"> <li>• Pupils learn that children's websites must protect their private information. They learn to identify these secure sites by looking for their privacy policies and privacy seals of approval.</li> <li>• Pupils explore how it feels to be cyberbullied, how cyberbullying is similar to or different than in-person bullying, and learn strategies for handling cyberbullying when it arises.</li> <li>• Pupils explore how the media can play a powerful role in shaping our ideas about girls and boys. They practice identifying messages about gender roles in two online activity zones for children.</li> </ul>
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