COMPUTING

Curriculum Map

Skills and Knowledge Progression 22-23

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.

	Year 3	Year 4	Year 5	Year 6
Topics Studied	**Creating media – Desktop publishing** Creating media – Desktop publishing Creating media – Desktop publishing Word processing skills Power Point skills Touch Typing **Creating Media Animation** - Stick Pivot Software. **Computing systems and networks** – Connecting computers **Coding:** Code for life/ rapid router/ **Spreadsheets** Excel: inserting formula and using auto sum tool.	**Computing systems and networks** – The internet **Coding** Using Scratch and Lego WeDo (Block coding to control small devices). **Spreadsheets** Excel: Creating simple function machines using formula. **Creating media** – Desktop publishing •Word processing skills •Power Point skills **Creating media** – Photo editing **Creating media** –Podcasting Audio Editing - Audacity	**Creating media** – Desktop publishing Power Point skills Create a quiz using hyperlinks. **Spreadsheets** Excel: Charts and graphs. **Creating media** – Vector drawing Google drawing to generate images using shapes and lines. **Coding:** Kodu Game Lab and Vex VR Block coding to control the VR Rover over several missions. **Computing systems and networks** – Sharing information **Creating media** – Green screen filming..	**Creating media –** Creating Apps Power Apps Create Apps, WW2 theme. **Creating media** – 3D Modelling **Computing systems and networks** – Communication **Creating media** – Stop Motion Animation Using animation Software to create stop motion films. **Coding** - Microsoft MakeCode Arcade. Create Gameboy style games. **Creating media** – Video editing Microsoft Video Editor Creating leavers videos
Computer Science	**Skills:** Pupils create programs to accomplish specific goals: • using an increasing range of digital devices and applications. • exploring and understanding the impact of changing instructions. • using sequence and repetition • decomposing problems both on and off screen • using the principles of logical reasoning in	**Skills:** Pupils create and debug programs. They can: • use sequence and repetition. • refine algorithms to improve efficiency • control or simulate physical systems Pupils begin to explore and notice the similarities and differences between programming languages and use this knowledge to help them	**Skills:** Pupils create, deconstruct and refine programs to accomplish specific goals. They can: • improve efficiency • use selection within programs • use a range of simple inputs and outputs to control or simulate physical systems. Pupils use logical reasoning to explain how some algorithms work and to detect and correct errors in programs.	**Skills:** Pupils deconstruct, improve and create programs including: • using selection and working with variables. • using the principles of logical reasoning • challenging themselves by making simple programs increasingly complex and employ a variety of strategies to solve problems.

	order to resolve problems.	create and debug programs efficiently.	They independently employ strategies to solve problems.	Pupils can explain why they have structured algorithms as they have and describe the effect this has on a program
Digital Literacy *Office Suite Skills/ Publishing Skills CAD*	**Skills:** **Using Word, Pupils….** • Can centre and underline text • Can change the size , colour and style of font • Can use the mouse to highlight text. • Can amend text by over-typing and then save their work. • Can combine text and graphics (clip art or from saved file/ internet). • Can right click on picture to manipulate its size/ colour properties. • Can use the shift key to produce punctuation marks such as exclamation marks. • Can use bold and italic and other font effects (size, colour, and style) appropriately. • Can use alignment effects, e.g. right and left justifies. • Can use cut and paste to re-order text. • Can use a spell checker. **Using PowerPoint, Pupils…** • Can insert text box • Can insert new slide • Can insert Word Art, change style colour and font • Can use Word Art format tool bar to Warp text • Can insert shapes; resize, colour, order and group/ungroup. • Can insert picture from file/ clip art or copy/paste.	**Skills:** **Using Word, Pupils….** • Can amend text using find and replace. • Can insert a table, split and merge cells. **Using PowerPoint, Pupils…** • Can use animations tool to move objects/shapes pictures • Can use Transitions between slides • Can use advance slide tool, using timings. **Using Excel, Pupils…** • Can create formula to add, subtract, divide or multiply 2 or more cells. **Using Paint.net** • Can manipulate and edit photos.	**Skills:** **Using PowerPoint, Pupils…** • Can select object, right click and insert hyperlink to website. • Can use hyperlink tool to link to another slide in presentation. **Using Excel, Pupils…** • Can create a table of data, the use chart tools to create chart. • Can create a function machine (use formula) to solve problems. Using Google Drawing: • Can generate vector drawings.	**Skills:** 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, functionality and impact on the user. **Using TinkerCAD** • Pupils are able to use 3D software to create images.

	• Can resize picture, order, use artistic effects, corrections, color , remove background and picture styles. **Using Excel, Pupils…** • Can insert simple formula eg =6+2 • Can use auto sum tool to add several cells.			
Digital Literacy *Multimedia*	**Skills:** **Pupils…** • Can create a simple animation that uses stop motion principles.	**Skills:** **Pupils…** • Can import audio. • Can cut and edit audio tracks. • Can insert a sound effect	**Skills:** **Pupils…** • Can use effect tools to change volume, pitch, fade in and fade out. • Can embed background music or SFX alongside vocals. Can use APP building or Web Design software to: • Insert screens • Upload images • Code buttons that link to other screens.	**Skills:** **Pupils…** • Can use video editing suite software to create a short film. • Can trim video clips • Can merge clips together. • Can manipulate the audio of both foreground and background. • Can add SFX and transitions • Can add opening and ending credits. Can use APP building or Web Design software to: • Create scrolling screens • Incorporate audio and video
Information Technology *General Skills and the wider world.*	**Skills:** **Pupils…** • Can turn on, logon and then shutdown laptop. • Can save work in the correct location on the network and open to make changes. • Can sign on to use a single sign in package to access a variety of online software. • Can safely sign out of online software. **Knowledge:** • Can understand how computers communicate with each other.	**Knowledge:** • Can understand how the internet works. .	**Knowledge:** • Can understand how information can be shared. • To know how the way we communicate can leave a digital footprint..	**Knowledge:** • Can understand we can use the internet to communicate • To know how the way we communicate can leave a digital footprint. .

| Internet Safety | **Skills:**

• Pupils learn strategies to increase the accuracy of their keyword searches and make inferences about the effectiveness of the strategies.

Knowledge:
• Pupils know the reasons why people use passwords, the benefits of using passwords, and strategies for creating and keeping strong, secure passwords.
• Pupils know that people can connect with one another through the Internet. I understand how the ability for people to communicate online can unite a community
• Pupils recognise the ways in which digital devices can be distracting. Identify how they feel when others are distracted by their devices. Identify ideal device-free moments for themselves and others.
• Pupils understand what online meanness can look like and how it can make people feel. Identify ways to respond to mean words online, using "S-T-O-P".
• Pupils learn that the information they share online leaves a digital footprint or "trail". Explore what information is OK to be shared online. | **Skills:**

• Pupils learn strategies to increase the accuracy of their keyword searches and make inferences about the effectiveness of the strategies.

Knowledge:
• Pupils know what it means to be responsible to and respectful of my offline and online communities as a way to learn how to be a good digital citizen.
• Pupils can define what a community is, both in person and online. Explain how having norms helps people in a community achieve their goals. Create and pledge to adhere to shared norms for being in an online community.
• Pupils understand that they may get online messages from other kids that can make me feel angry, hurt, sad, or fearful. They can identify actions that will make them an, 'Upstanders in the face of cyberbullying.'
• Pupils consider how posting selfies or other images will lead others to make assumptions about them.Reflect on the most important parts of their unique identities.Identify ways they can post online to best reflect who they are.
• Pupils recognise that photos and videos can be altered digitally. Identify different reasons why someone might alter a photo or video. Analyse altered photos and videos to try to determine why | **Skills:**

• Pupils learn how to create secure passwords in order to protect their private information and accounts online.
• 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.

Knowledge:
• Pupils learn the "What? When? How Much?" framework for describing their media choices. Use this framework and their emotional responses to evaluate how healthy different types of media choices are. Begin to develop their own definition of a healthy media balance.
• Pupils identify the reasons why people share information about themselves online. Explain the difference between private and personal information. Explain why it is risky to share private information online.
• Pupils can define the term "digital footprint" and identify the online activities that contribute to it. Identify ways they are -- and are not -- in control of their digital footprint. Understand what responsibilities they have for the digital footprints of themselves and others.
• Can define "social interaction" and give an example. Describe the positives and negatives of social interaction in online | **Knowledge:**

• Can compare and contrast different kinds of online-only friendships. Describe the benefits and risks of online-only friendships. Describe how to respond to an online-only friend if the friend asks something that makes them feel uncomfortable.
• Can reflect on how balanced they are - in their daily lives. Consider what "media balance" means and how it applies to them. Create a personalised plan for healthy and balanced media use.
• Can recognise similarities and differences between in-person bullying, cyberbullying and being mean. Empathise with the targets of cyberbullying. Identify strategies for dealing with cyberbullying and ways they can be an upstander for those being bullied.
• Can define "gender stereotypes" and describe how they can be present online. Describe how gender stereotypes can lead to unfairness or bias. Create an avatar and a poem that show how gender stereotypes impact who they are. |

			games. Create an online video game cover that includes guidelines for positive social interaction.	
			• Pupils can reflect on the characteristics that make someone an upstanding digital citizen. Recognise what cyberbullying is. Show ways to be an upstander by creating a digital citizenship superhero comic strip.	