LIPHOOK
FEDERATION

Computing

Knowledge & skills

Progression

EYFS to Year 6

Computing Curriculum Progression: Year R to Year 6

Our high-quality computing curriculum is planned as a 7-year journey across the Federation and equips our pupils to use computational thinking, critical 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. At its core is computer science, children learn:

- What things are and how they work (declarative knowledge)
- How to do things with technology (procedural knowledge)

They use this to create programs, systems and digital content, developing skills in coding, problem-solving, and safe, responsible use of technology. Our aim is for children to be digitally literate, able to think critically, express ideas, and work confidently in a digital world.

By the end of Liphook Infant School our pupils will have developed the core skills, knowledge and understanding within the 3 strands of Computing Science, IT Skills and Digital Literacy to enable them to access the teaching and learning that they will experience in Key Stage 2.

Our Infant pupils are taught to:

- understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions
- create and debug simple programs
- use logical reasoning to predict the behaviour of simple programs
- use technology purposefully to create, organise, store, manipulate and retrieve digital content
- recognise common uses of information technology beyond school
- use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies

Computing Curriculum Progression: Year R to Year 6

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By the end of Key Stage 2, our pupils will build upon the skills, matters and processes that they have learned in Key Stage 1 and develop further skills, knowledge and understanding within the 3 strands of Computing Science, IT Skills and Digital Literacy to enable them to access the teaching and learning that they will experience in Key Stage 3.

Our Junior pupils are 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

'Greater Depth' is achieved through a focus on ACE – tasks enable pupils to Apply, Connect and Explain (or Explore) & Evaluate

Apply	Pupils have a curiosity to apply computing skills, knowledge and understanding from their current, and previous learning independently and in new or unfamiliar technologies to analytically solve problems and suggest new ideas.
Connect	Pupils make clear, strong and appropriate connections between their computing skills, knowledge and understanding and use this in a variety of contexts, as they are inquisitive to know more.
Explore & Evaluate	Pupils are able to explore and combine the taught skills to create individual, innovative and more complex outcomes. They can explain the processes to others and critically evaluate the results of their independent work to assess how effective it is

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Online Safety. Online relationships Progression: Infants

Year R	Year 1	Year 2
Recognise some ways in which the internet can be used to communicate.	Give examples of when I should ask permission to do something online and explain why this is important.	Give examples of how someone might use technology to communicate with others they don't also know offline and explain why this might be risky. (e.g. email, online gaming, a pen-pal in another school / country).
Give examples of how I (might) use technology to communicate with people I know.	Use the internet with adult support to communicate with people I know (e.g. video call apps or services).	Explain who I should ask before sharing things about myself or others online.
	Explain why it is important to be considerate and kind to people online and to respect their choices.	Identify who can help me if something happens online without my consent
	Explain why things one person finds funny or sad online may not always be seen in the same way by others	Describe different ways to ask for, give, or deny my permission online and can identify who can help me if I am not sure.
		Explain why I have a right to say 'no' or 'I will have to ask someone'. I can explain who can help me if I feel under pressure to agree to something I am unsure about or don't want to do.
		Explain how it may make others feel if I do not ask their permission or ignore their answers before sharing something about them online.
		I can describe different ways to ask for, give, or deny my permission online and can identify who can help me if I am not sure.
		I can explain why I have a right to say 'no' or 'I will have to ask someone'. I can explain who can help me if I feel under pressure to agree to something I am unsure about or don't want to do.
		I can explain how it may make others feel if I do not ask their permission or ignore their answers before sharing something about them online.

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Online Safety. Online relationships Progression: Juniors

Year 3	Year 4	Year 5	Year 6
Describe ways people who have similar likes and interests can get together online.	Describe strategies for safe and fun experiences in a range of online social environments (e.g. livestreaming, gaming platforms)	Give examples of technology-specific forms of communication (e.g. emojis, memes and GIFs).	Explain how sharing something online may have an impact either positively or negatively
Explain what it means to 'know someone' online and why this might be different from knowing someone offline.	Give examples of how to be respectful to others online and describe how to recognise healthy and unhealthy online behaviours.	Explain that there are some people I communicate with online who may want to do me or my friends harm. I can recognise that this is not my / our fault.	Describe how to be kind and show respect for others online including the importance of respecting boundaries regarding what is shared about them online and how to support them if others do not.
Explain what is meant by 'trusting someone online', why this is different from 'liking someone online', and why it is important to be careful about who to trust online including what information and content they are trusted with.	Explain how content shared online may feel unimportant to one person but may be important to other people's thoughts feelings and beliefs.	Describe some of the ways people may be involved in online communities and describe how they might collaborate constructively with others and make positive contributions. (e.g. gaming communities or social media groups).	Describe how things shared privately online can have unintended consequences for others. E.g. screen-grabs.
Explain why someone may change their mind about trusting anyone with something if they feel nervous, uncomfortable or worried.		Explain how someone can get help if they are having problems and identify when to tell a trusted adult.	Explain that taking or sharing inappropriate images of someone (e.g. embarrassing images), even if they say it is okay, may have an impact for the sharer and others; and who can help if someone is worried about this.
Explain how someone's feelings can be hurt by what is said or written online.		Demonstrate how to support others (including those who are having difficulties) online.	
Explain the importance of giving and gaining permission before sharing things online; how the principle of sharing online is the same as sharing offline e.g. sharing images and videos.			

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Online Safety. Self image and Identity Progression: Year R to Y6

Year R	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Recognise, online or offline, that anyone can say 'no' - 'please stop' - 'I'll tell' - 'I'll ask' to somebody who makes them feel sad, uncomfortable, embarrassed or upset.	Recognise that there may be people online who could make someone feel sad, embarrassed or upset.	Explain how other people may look and act differently online and offline.	Explain what is meant by the term 'identity'.	Explain how my online identity can be different to my offline identity.	Explain how identity online can be copied, modified or altered.	Identify and critically evaluate online content relating to gender, race, religion, disability, culture and other groups, and explain why it is important to challenge and reject inappropriate representations online.
	If something happens that makes me feel sad, worried, uncomfortable or frightened I can give examples of when and how to speak to an adult I can trust and how they can help	Give examples of issues online that might make someone feel sad, worried, uncomfortable or frightened; I can give examples of how they might get help	Explain how people can represent themselves in different ways online	Describe positive ways for someone to interact with others online and understand how this will positively impact on how others perceive them.	Demonstrate how to make responsible choices about having an online identity, depending on context	Describe issues online that could make anyone feel sad, worried, uncomfortable or frightened. I know and can give examples of how to get help, both on and offline
			Explain ways in which someone might change their identity depending on what they are doing online (e.g. gaming; using an avatar; social media) and why.	Explain that others online can pretend to be someone else, including my friends, and can suggest reasons why they might do this.		Explain the importance of asking until I get the help needed.

Online Safety. Online bullying and Reputation: Infants

Year R	Year 1	Year 2
Describe ways that some people can be unkind online.	Recognise that information can stay online and could be copied.	Explain how information put online about someone can last for a long time.
Offer examples of how this can make others feel.	Describe what information I should not put online without asking a trusted adult first.	Describe how anyone's online information could be seen by others.
Identify ways that I can put information on the internet.	Describe how to behave online in ways that do not upset others and can give examples.	Know who to talk to if something has been put online without consent or if it is incorrect.
		Explain what bullying is, how people may bully others and how bullying can make someone feel.
		Explain why anyone who experiences bullying is not to blame
		Talk about how anyone experiencing bullying can get help.

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Online Safety. Online bullying and Reputation: Juniors

Year 3	Year 4	Year 5	Year 6
Explain how to search for information about others online	Describe how to find out information about others by searching online.	Search for information about an individual online and summarise the information found.	Explain the ways in which anyone can develop a positive online reputation.
Give examples of what anyone may or may not be willing to share about themselves online. I can explain the need to be careful before sharing anything personal.	Explain ways that some of the information about anyone online could have been created, copied or shared by others	Describe ways that information about anyone online can be used by others to make judgments about an individual and why these may be incorrect	Explain strategies anyone can use to protect their 'digital personality' and online reputation, including degrees of anonymity.
Explain who someone can ask if they are unsure about putting something online.	Recognise when someone is upset, hurt or angry online.	Recognise online bullying can be different to bullying in the physical world and can describe some of those differences.	Describe how to capture bullying content as evidence (e.g screen-grab, URL, profile) to share with others who can help me.
Describe appropriate ways to behave towards other people online and why this is important.	Describe ways people can be bullied through a range of media (e.g. image, video, text, chat).	Describe how what one person perceives as playful joking and teasing (including 'banter') might be experienced by others as bullying.	Explain how someone would report online bullying in different contexts.
Give examples of how bullying behaviour could appear online and how someone can get support.	Explain why people need to think carefully about how content they post might affect others, their feelings and how it may affect how others feel about them (their reputation).	Explain how anyone can get help if they are being bullied online and identify when to tell a trusted adult.	
		Identify a range of ways to report concerns and access support both in school and at home about online bullying.	
		Explain how to block abusive users.	
		Describe the helpline services which can help people experiencing bullying, and how to access them (e.g. Childline or The Mix).	

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Information Technology: Infants

Year R	Year 1	Year 2
Digital Photography	**Grouping Data**	**Digital Photography**
		iPad
	• Label objects • Identify that objects can be counted • Describe objects in different ways • Count objects with the same properties • Compare groups of objects • Answer questions about groups of objects	• Use a digital device to take a photograph. • Make choices when taking a photograph. • Describe what makes a good photograph. • Decide how photographs can be improved. • Use tools to change an image. • Recognise that photos can be changed
Use apps to support learning on the iPad	**Digital Writing**	**Pictograms**
	SeeSaw	**J2 Data- J2e pictogram and j2e chart**
	• Use a computer to write • Add and remove text on a computer • Identify that the look of text can be changed on a computer • Make careful choices when changing text • Explain why I used the tools that I chose • Compare typing on a computer to writing on paper	• Recognise that we can count and compare objects using tally charts. • Recognise that objects can be represented as pictures. • Create a pictogram. • Select objects by attribute and make comparisons. • Recognise that people can be described by attributes. • Explain that we can present information using a computer
Use of audio devices- listening cube- record own stories		**Digital Music**
		Chrome Music Lab
		• Say how music can make us feel. • Identify that there are patterns in music. • Experiment with sound using a computer. • Use a computer to create a musical pattern • Create music for a purpose. • Review and refine our computer work
Using Technology appropriately within play e.g. office		

Information Technology: Lower Juniors

Year 3	Year 4
Stop Frame Animation	**Data logging**
Stop Motion (i-motion)	**Microbits & Data Harvest Data log**
• Explain and show that animation is a sequence of drawings or photographs. • Relate animated movement with a sequence of images. • Plan an animation which is achievable on screen. • Use onion skinning to make small changes between frames. • Review and improve an animation. • Evaluate the impact of adding other media to animation.	• Explain that data gathered over time can be used to answer questions • Use a digital device to collect data automatically • Explain that a data logger collects 'data points' from sensors over time • Recognise how a computer can help us analyse data • Identify the data needed to answer questions • Use data from sensors to answer questions
Desktop Publishing	**Photo Editing**
Book Creator	**iPads**
• Recognise how text and images convey information • Recognise that text and layout can be edited • Choose appropriate page settings • Add content to a desktop publishing publication • Consider how different layouts can suit different purposes • Consider the benefits of desktop publishing	• Explain that the composition of digital images can be changed • Explain that colours can be changed in digital images • Explain how cloning can be used in photo editing • Explain that images can be combined • Combine images for a purpose • Evaluate how changes can improve an image

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Information Technology: Upper Juniors

Year 5	Year 6
Vector drawing	**3D Modelling**
Google drawings	**Tinkercad**
• Identify that drawing tools can be used to produce different outcomes • Create a vector drawing by combining shapes • Use tools to achieve a desired effect • Recognise that vector drawings consist of layers • Group objects to make them easier to work with • Apply what I have learned about vector drawings	• Recognise that you can work in three dimensions on a computer. • Identify that digital 3D objects can be modified. • Recognise that objects can be combined in a 3D model. • Create a 3D model for a given purpose. • Plan my own 3D model. • Create my own 3D model.
Flat File Databases	**Web Page Creation**
J2E	**Google Sites**
• Use a form to record information • Compare paper and computer-based databases • Outline how you can answer questions by grouping and then sorting data • Explain that tools can be used to select specific data • Explain that computer programs can be used to compare data visually • Use a real-world database to answer questions	• Review an existing website and consider its structure • Plan the features of a web page • Consider the ownership and use of images (copyright) • Recognise the need to preview pages • Outline the need for a navigation path • Recognise the implications of linking to content owned by other people
Video Production	
iPad imovie	
• Explain what make a video effective. • Explain what make a video effective. • Capture video using a range of techniques. • Create a storyboard. • Identify that video can be improved through reshooting and editing. • Consider the impact of the choices made when making and sharing a video.	

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Computer Science: Infants

Year R	Year 1	Year 2
Unplugged activities - (eg maze building with lego, jigsaws, ordering and sequencing pictures	**Technology around us** • Identify technology. • Identify a computer and its main parts. • Use a mouse in different ways. • Use a keyboard to type on a computer. • Use a keyboard to edit text. • Create rules for using technology responsibly	**Robot Algorithms** **Beebots** • Describe a series of instructions as a sequence. • Explain what happens when we change the order of instructions. • Use logical reasoning to predict the outcome of a program. • Explain that programming projects can have code and artwork. • Design an algorithm. • Create and debug a program that I have written.
Following and giving verbal instructions	**Moving a Robot** **Beebots** • Explain what a given command will do. • Act out a given word. • Combine forwards and backwards commands to make a sequence. • Combine four direction commands to make sequences. • Plan a simple program. • Find more than one solution to a problem.	**Programming Quizzes** **Scratch Junior** • Explain that a sequence of commands has a start. • Explain that a sequence of commands has an outcome. • Create a program using a given design. • Change a given design. • Create a program using my own design. • Decide how my project can be improved.
Beebots - predicting, programming simple instructions	**Programming Animation** **Scratch Junior** • Choose a command for a given purpose. • Show that a series of commands can be joined together. • Identify the effect of changing a value. • Explain that each sprite has its own instructions. • Design the parts of a project. • Use my algorithm to create a program.	

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Computer Science: Lower Juniors

Year 3	Year 4
Connecting Computers	**The Internet**
• Explain how digital devices function • Identify input and output devices • Recognise how digital devices can change the way we work • Explain how a computer network can be used to share information • Explore how digital devices can be connected • Recognise the physical components of a network	• Describe how networks physically connect to other networks. • Recognise how networked devices make up the internet. • Outline how websites can be shared via the World Wide Web (WWW). • Describe how content can be added and accessed on the World Wide Web (WWW). • Recognise how the content of the WWW is created by people. • Evaluate the consequences of unreliable content.
Programming Sequencing Sounds	**Programming Repetition in Shape**
Scratch	**Logo / Turtle Academy**
• Explore a new programming environment – Scratch • Identify that commands have an outcome • Explain that a program has a start • Recognise that a sequence of commands can have an order • Change the appearance of my project • Create a project from a task description	• Identify that accuracy in programming is important. • Create a program in a text-based language (Logo). • Explain what 'repeat' means. • Modify a count-controlled loop to produce a given outcome. • Decompose a task into small steps. • Create a program that uses count-controlled loops to produce a given outcome
Programming Events and Actions	**Programming Repetition in Games**
Scratch	**Scratch**
• Explain how a sprite moves in an existing project • Create a program to move a sprite in four directions • Adapt a program to a new context • Develop my program by adding features • Identify and fix bugs in a program • Design and create a maze-based challenge	• Develop the use of count-controlled loops in a different programming environment (Scratch) • Explain that in programming there are infinite loops and count controlled loops • Develop a design that includes two or more loops which run at the same time • Modify an infinite loop in a given program • Design a project that includes repetition • Create a project that includes repetition

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Computer Science: Upper Juniors

Year 5	Year 6
Selection in Physical Computing	**Systems and Searching**
Crumble	• Explain that computers can be connected together to form systems • Recognise the role of computer systems in our lives • Experiment with search engines • Describe how search engines select results • Explain how search results are ranked • Recognise why the order of results is important, and to whom
• Control a simple circuit connected to a computer • Write a program that includes count-controlled loops • Explain that a loop can stop when a condition is met • Explain that a loop can be used to repeatedly check whether a condition has been met • Design a physical project that includes selection • Create a program that controls a physical computing project	
Programming Selection in Quizzes	**Programming Sensing Movement**
Scratch	**Microbit and Crumble**
• Explain how selection is used in computer programs (Scratch) • Relate that a conditional statement connects a condition to an outcome • Explain how selection directs the flow of a program • Design a program which uses selection • Create a program which uses selection • Evaluate my program	• Create a program to run on a controllable device (Microbit) • Explain that selection can control the flow of a program • Update a variable with a user input • Use a conditional statement to compare a variable to a value • Design a project that uses inputs and outputs on a controllable device • Develop a program to use inputs and outputs on a controllable device
	Programming Variables in Games
	Scratch
	• Define a ‘variable’ as something that is changeable • Explain why a variable is used in a program (Scratch) • Choose how to improve a game by using variables • Design a project that builds on a given example • Use my design to create a project • Evaluate my project