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Introduction

Our computing curriculum through Years 1 to 6 has been designed as follows: -

- It is taught in 4 strands – computer science, programming, applying technology, safe and confident use of technology
- Key board skills are explicitly taught from EYFS to Y6
- Needs more here

Intent, Implementation and Impact

Intent	Implementation	Impact
<p>Ensure all children:</p> <ul style="list-style-type: none"> • Can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation. • Are able to analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems. • Can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems • Are responsible, competent, confident and creative users of information and communication technology. • Digitally literate for future • Natural and artificial systems • Knowing the dangers of a digital world and understanding how to protect themselves. 	<ul style="list-style-type: none"> • SwitchedOn Computing is used as a scheme of work alongside explicitly teaching keyboard skills • Strand 4 “Safe and Confident Use of Technology” is taught both discretely and within every lesson. • The way we assess has been explicitly thought through in terms of “knowing more, doing more, remembering more”. • Topic overviews and timings are planned through the use of Rising stars switched on computing. This ensures a broad and balanced curriculum is taught across all areas of computing at an age-appropriate level. • Weekly computing lessons will follow the structure of Switched on computing and will provide opportunities in lessons to focus on the six key strands in computing. • Ipads and Beebots are available to be used to support learning in addition to weekly computing lessons • E-safety is taught regularly as part of units • Computing is taught to children in year 1-6 • Assessment takes place at the end of each unit. • Knowledge organizers are sent for each unit. • Class books are kept as evidence of computing learning. • Additional time is given to year one children to learn basic word processing skills. 	<p>Know more</p> <ul style="list-style-type: none"> • Switched on computing ensures that all children are taught age related content which builds on previous learning. • Working walls showcase worked examples so that children can refer to them when undertaking their independent work. • Vocabulary is explicitly taught that is relevant to the area of study. Children are encouraged to use the correct vocabulary during lessons and this is modelled by the teacher. • End of term assessments are completed to gain insight into what the children have learnt. • Switched on computing covers all the strands of the computing curriculum. • Children are exposed to a range of computing devices that are relevant to today’s digital world. <p>Do more</p> <ul style="list-style-type: none"> • Lessons are planned which build upon skills previously learnt. • Children are given time to apply skills. • Children use the skills they have learnt independently. • Children use connections to do more. <p>Remember more</p> <ul style="list-style-type: none"> • At the beginning of a unit previous learning is recapped to enable children to make links. • Exposure to a range of technologies. • Children can use vocabulary to discuss learning. • Children can explain how to keep themselves safe.

Overview – 2 year rolling programme

Cycle A						
Term	Autumn		Spring		Summer	
EYFS	<p>Technology is used daily. The children use hardware and age-appropriate software. In free flow learning the children have the opportunity to use interactive whiteboards, desktop computers and ipads. They also use electrical devices, such as cameras and programmable toys, such as Beebots. In Reception, we regularly use the computing suite.</p> <p>There is specific curriculum guidance linked to ICT skills at Early Years Foundation Stage (EYFS), and the children will be given opportunities to use ICT to develop skills across the areas of learning.</p>					
Class/Theme	Programming	Computational thinking	Creativity	Computer networks	Communication/ collaboration	Productivity
Oak Year 1	Unit 1.1 – We are treasure hunters	Unit 1.2 – We are TV chefs	Unit 1.3 – We are digital artists	Unit 1.4 – We are publishers	Unit 1.5 – We are rhythmic	Unit 1.6 – We are detectives
Birch Years 2/3/4	Unit 3.1 – We are programmers	Unit 3.2 – We are bug fixers	Unit 3.3 – We are presenters	Unit 3.4 – We are who we are	Unit 3.5 – We are co-authors	Unit 3.6 – We are opinion pollsters
Willow Years 4/5/6	Unit 5.1 – We are game developers	Unit 5.2 – We are cryptographers	Unit 5.3 – We are architects	Unit 5.4 – We are web developers	Unit 5.5 – We are adventure gamers	Unit 5.6 – We are VR designers
Cycle B						
Term	Autumn		Spring		Summer	
Theme	Programming	Computational thinking	Creativity	Computer networks	Communication/ collaboration	Productivity
Oak R/1	Unit 2.1 – We are astronauts	Unit 2.2 – We are games testers	Unit 2.3 – We are photographers	Unit 2.4 – We are safe researchers	Unit 2.5 – We are animators	Unit 2.6 – We are zoologists
Birch 2/3/4	Unit 4.1 – We are software developers	Unit 4.2 – We are makers	Unit 4.3 – We are musicians	Unit 4.4 – We are bloggers	Unit 4.5 – We are artists	Unit 4.6 – We are meteorologists
Willow 4/5/6	Unit 6.1 – We are toy makers	Unit 6.2 – We are computational thinkers	Unit 6.3 – We are publishers	Unit 6.4 – We are connected	Unit 6.5 – We are advertisers	Unit 6.6 – We are AI developers

Progression of knowledge and skills

Programming - planning, writing and testing computer programs for digital devices, from floor turtles to tablets.	
Class	Unit and knowledge
Oak EYFS	<p>By the end of EYFS most children should be able to:</p> <ul style="list-style-type: none"> • complete a simple computer program. • perform simple functions using mouse and keyboard • use appropriate internet-based games and activities to support their learning.
Oak 1	<p>Knowledge</p> <ul style="list-style-type: none"> • Know that a programmable robot can be controlled by inputting a sequence of instructions <p>Skills</p> <ul style="list-style-type: none"> • Can develop and record a sequence of instructions as an algorithm • Can programme a robot to follow an algorithm • Can debug a programme • Can predict how a programme will work
	<p>Skills</p> <ul style="list-style-type: none"> • Can break down a process into simple, clear steps (an algorithm) • Can use different features of a video camera • Can use a video camera to capture moving images • Can edit a video to include an audio commentary • Can work with another person • Can discuss their work and say how it could be improved
Birch 2/3/4	<p>Skills</p> <ul style="list-style-type: none"> • Can plan and create an algorithm for an animated scene in the form of a storyboard • Can write a program in Scratch to create an animation, including characters, dialogue, costumes, backdrops and sound • Can review their animation and correct mistakes.
	<p>Skills</p> <ul style="list-style-type: none"> • Can develop an educational computer game using selection and repetition • Can understand and use variables • Can start to debug c computer program • Can recognise the importance of user interface design, including consideration of input and output
Willow 4/5/6	<p>Skills</p> <ul style="list-style-type: none"> • Can create artwork and sound for a game • Can design and create a computer program for a computer game, which uses sequence, repetition and variables • Can detect and correct errors in their computer game • Can use iterative development techniques (making and testing a series of small changes) to improve their game
	<p>Skills</p> <ul style="list-style-type: none"> • Can talk critically about how video is used to promote a cause • Can storyboard an effective advert for a cause • Can work collaboratively to shoot footage and source additional content • Can acknowledge intellectual property rights • Can work collaboratively to edit the assembles content to make an effective advert

Computational thinking - some of the computer science foundations – particularly algorithms, logical reasoning and decomposing problems into smaller parts.	
Class	Unit and knowledge
Oak EYFS	<p>By the end of EYFS most children should be able to:</p> <ul style="list-style-type: none"> • complete a simple computer program. • perform simple functions using mouse and keyboard • use appropriate internet-based games and activities to support their learning.
Oak 1	<p>Skills</p> <ul style="list-style-type: none"> • Can break down a process into simple, clear steps (an algorithm) • Can use features of a video camera • Can use a video camera to capture moving images • Can edit a video to include an audio commentary • Can work with another person • Can discuss their work and say how it could be improved
	<p>Skills</p> <ul style="list-style-type: none"> • Can observe and describe what happens in computer games • Can use logical reasoning to make predictions of what a program will do and test predictions • Can think critically about computer games and their use • Can create sequences of instructions for a virtual robot to solve a problem • Can work out strategies for playing a game well • Can talk about how to use games safely and in balance with other activities.
Birch 2/3/4	<p>Knowledge</p> <ul style="list-style-type: none"> • Know how to use Scratch – a series of command blocks that can be dragged into a sequence to create an algorithm to control a on screen object. <p>Skills</p> <ul style="list-style-type: none"> • Can develop strategies to find an error in a program • Can problem solve and not give up • Can recognise a number of common types of bugs in software
	<p>Knowledge</p> <ul style="list-style-type: none"> • Know about the input-process-output model of computation – instructions need to be inputted in order for the computer to produce an output. • Know about the inputs and outputs available on a BBC micro.bit <p>Skills</p> <ul style="list-style-type: none"> • Can program using MakeCode block-based environment • Can test and debug programs they write, using an on-screen simulator and the micro.bit • Can convert and transfer a program written on screen to the micro.bit
	<p>Knowledge</p> <ul style="list-style-type: none"> • Know that semaphore is a system of sending messages by holding the arms or two flags or poles in certain positions according to an alphabetic code. • Know that Morse Code is an alphabet or code in which letters are represented by combinations of long and short light or sound signals. • To understand that private information needs to be encrypted online to ensure secure transmission of personal and financial data. • To know that it is important to use complex passwords so they cannot be copied or cracked and to keep them secure so that they remain private. • Know that encryption is the process of taking plain text, like a text message or email, and scrambling it into an unreadable format — called “cipher text.” Know that this can not be (practically) cracked. This helps protect the confidentiality of digital data stored
Willow 4/5/6	<p>Knowledge</p> <ul style="list-style-type: none"> • Know that semaphore is a system of sending messages by holding the arms or two flags or poles in certain positions according to an alphabetic code. • Know that Morse Code is an alphabet or code in which letters are represented by combinations of long and short light or sound signals. • To understand that private information needs to be encrypted online to ensure secure transmission of personal and financial data. • To know that it is important to use complex passwords so they cannot be copied or cracked and to keep them secure so that they remain private. • Know that encryption is the process of taking plain text, like a text message or email, and scrambling it into an unreadable format — called “cipher text.” Know that this can not be (practically) cracked. This helps protect the confidentiality of digital data stored

	<p>on computer systems or transmitted through a network like the internet.</p> <p>Skills</p> <ul style="list-style-type: none"> • Can encrypt and decrypt messages in simple ciphers
	<p>Knowledge</p> <ul style="list-style-type: none"> • Know how some key algorithms can be expressed as programs • Know how to determine which algorithms are more efficient than others for the same problem (length, complexity, error rate) • Understand common algorithms for searching and sorting a list (e.g. order numerically/alphabetically/by date; search for words/text streams) <p>Skills</p> <ul style="list-style-type: none"> • Can reason logically about algorithms

Creativity - creating and refining original content using digital tools across a range of media.	
Class	Unit and knowledge
Oak EYFS	<p>By the end of EYFS most children should be able to:</p> <ul style="list-style-type: none"> • complete a simple computer program. • perform simple functions using mouse and keyboard • use appropriate internet-based games and activities to support their learning.
Oak Y1	<p>Skills</p> <ul style="list-style-type: none"> • Can select and set brushes and colours • Can create artwork in a range of styles on ipads • Can use the undo function for a mistake. • Can experiment using a paint package. • Can use multiple layers in art work • Can transform layers • Can paint on top of photographs. <p>Skills</p> <ul style="list-style-type: none"> • Can consider the technical and artistic merits of photographs • Can use the ipad camera app • Can take digital photographs • Can review, reflect or pick images taken • Can edit and enhance photographs.
Birch 2/3/4	<p>Skills</p> <ul style="list-style-type: none"> • Can research using the web • Can structure, prepare and deliver a talk about a given topic • Can record a piece to camera • Can edit a movis using static images and green screen footage • Can give constructive, critical feedback on recorded presentations <p>Skills</p> <ul style="list-style-type: none"> • Can create a repeating percussion rhythm • Can play music using virtual instruments • Can compose and edit tunes using the piano roll (pitch and duration) tool • Can perform electronic music using pre-recorded loops and own loops. • Can create a multi track compositions /performance using multiple instruments • Can give feedback to others on compositions and performances

Willow 4/5/6	<p>Knowledge</p> <ul style="list-style-type: none"> • Know that architects and engineers work in 3-D • Understand how to use a simple CAD (computer-aided-design) tool – objects which are put on the screen which are representations of 3-D structures which can be rotated to explore all angles. • Know that spatial awareness means to be aware of the space around objects and how the objects impacts on that space. • Know that aesthetic awareness is to be aware of the beauty and the practicality of an object, the balance between the two and how it fits in to the environment in which it sits. <p>Skills</p> <ul style="list-style-type: none"> • Can experiment with a 3 D environment
	<p>Knowledge</p> <ul style="list-style-type: none"> • Know that decision trees can be trained automatically to classify data • Know that a computer needs to be trained to recognise speech • Know that a neural net (i.e. the brain) recognises images by using successive layers of nodes to identify increasing levels of complexity. • Know that a neural net can be trained to classify images by looking at shape, colour, texture, reflectivity, size, context etc. • Know that a machine can be trained to identify sentiments – using computers to extract and analyse facial expressions, gait analysis, speech patterns etc to identify emotional states and preferences <p>Skills</p> <ul style="list-style-type: none"> • Can talk about ethical principles in designing AI systems (personal liberty, freedom from surveillance etc).

Computer networks - using and understanding the internet, the web and search engines, effectively and safely.	
Class	Unit and knowledge
Oak EYFS	<p>By the end of EYFS most children should be able to:</p> <ul style="list-style-type: none"> • complete a simple computer program. • perform simple functions using mouse and keyboard • use appropriate internet-based games and activities to support their learning.
Oak 1	<p>Knowledge</p> <ul style="list-style-type: none"> • Know how to plan a multimedia ebook using PowerPoint with scanned images and embedded audio files • Know that it is important to respect other people’s copyright <p>Skills</p> <ul style="list-style-type: none"> • Can choose and import images • Can record audio commentary • Can add and format titles and other text • Can explain how they protect their privacy • Can revise and improve their work

	<p>Skills</p> <ul style="list-style-type: none"> • Can work as part of a group • Can use research skills to search for information on the internet • Can talk through privacy implications of their use of search engines • Can be discerning in evaluating online information • Can use mind mapping to make notes • Can create and deliver a short, multi-media presentation
Birch 2/3/4	<p>Skills</p> <ul style="list-style-type: none"> • Can create structured presentations • Can narrate presentations • Can talk about trust and privacy when sharing information
	<p>Knowledge</p> <ul style="list-style-type: none"> • Know that blogs are a medium and a genre of writing <p>Skills</p> <ul style="list-style-type: none"> • Can create a sequence of blog posts on a theme • Can incorporate additional media • Can comment on the posts of others • Can comment critically and reflectively on a range of media, including text.
Willow 4/5/6	<p>Knowledge</p> <ul style="list-style-type: none"> • Know how information is passed between the components that make up the internet – for example computer switch, server, IP address • Know what the source code for a web page looks like and how it can be edited. • Know how a website can be structured – using a coded language (HTML) • Know how to add content to a webpage <p>Skills</p> <ul style="list-style-type: none"> • Can name the functions of components that make up the school's network
	<p>Knowledge</p> <ul style="list-style-type: none"> • Know how computers used stored programs to connect input to output – how a computer stores files and programs and uses storage and RAM • Know how to generate and evaluate designs in response to a brief <p>Skills</p> <ul style="list-style-type: none"> • Can plan a complex project by decomposing it in to smaller parts • Able to work with physical components of a system • Can design and write a program for an embedded system • Can use criteria to provide others with feedback on their work

Communication – collaboration - making the most of computers and the internet for communicating with one or many, and working together on projects.

Class	Unit and knowledge
Oak EYFS	<p>By the end of EYFS most children should be able to:</p> <ul style="list-style-type: none"> • complete a simple computer program. • perform simple functions using mouse and keyboard • use appropriate internet-based games and activities to support their learning.
Oak 1	<p>Skills</p> <ul style="list-style-type: none"> • Can record audio on an ipad • Can program sprites to playback recorded audio on ScratchJr • Can program ScratchJr to create repeating rhythms using recorded audio

	<ul style="list-style-type: none"> • Can explore different effects that can be applied to audio • Can create a repeating percussion pattern using a virtual drum machine • Can experiment with a range of virtual instruments <p>Knowledge</p> <ul style="list-style-type: none"> • Know that animation works by creating individual images and projecting them in sequence at a rate that is (usually) 24 frames per second. <p>Skills</p> <ul style="list-style-type: none"> • Can use a storyboard to plan an animation • Can create their own original characters, props and background for an animation • Can film, review and edit a stop-motion animation • Can record audio to accompany an animation • Can provide constructively critical feedback to their peers
<p>Birch 2/3/4</p>	<p>Knowledge</p> <ul style="list-style-type: none"> • Understand the conventions for collaborative online work, particularly in wikis are: - open to anyone, accessible, incremental (pages can cite other pages), monitored (to avoid duplication/abuse), unified in format, collaborative • Know their responsibilities when editing other people's work – not to change the meaning, not to editorialise it or add comments and to maintain accessibility. • Know how to use wikipedia and know about the potential problems associated with its use - inaccuracy <p>Skills</p> <ul style="list-style-type: none"> • Can practise research skills • Can write for a target audience using a wiki tool • Can work with others • Can proof read <p>Knowledge</p> <ul style="list-style-type: none"> • Know the links between geometry and art – perspective uses geometrical skills, lots of art is based on geometry • Know how to use the tools and techniques of a vector graphics package • Know how to use turtle graphics <p>Skills</p> <ul style="list-style-type: none"> • Can experiment with the tools available. • Can refine and develop work in response to evaluation and feedback from peers. • Can talk about computer generated art
<p>Willow 4/5/6</p>	<p>Knowledge</p> <ul style="list-style-type: none"> • Know how to plan a non-linear presentation (e.g presenting choices on a slide) • Know how to create text as part of a presentation <p>Skills</p> <ul style="list-style-type: none"> • Can add and edit images in a presentation • Can use hyperlinks for navigation between the slides of a presentation • Can record and add audio narration to a presentation • Can use commenting tools to give feedback on a presentation <p>Knowledge</p> <ul style="list-style-type: none"> • Know the rules and guidelines for a civil online discussion (respect, protect personal information and identity, courtesy) • Know how search results are selected and ranked – relevance, payment, popularity • Know how to argue their point effectively, supporting views with sources. • Know how to counter someone's argument while showing respect and tolerance. • Know how to judge the reliability of an online source – look at several sources, look at

	<p>where the source is coming from.</p> <ul style="list-style-type: none"> • Know some strategies for dealing with online bullying – don't respond, don't give out personal information, tell a trusted adult, if possible leave the content on the screen to show the trusted adult.
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Productivity - collecting and analysing data and information using computers; organising, manipulating and presenting this to an audience.	
Class	Unit and knowledge
Oak R/1	<p>Knowledge</p> <ul style="list-style-type: none"> • Know how data can be structured as records with fields for information • Know how data can be organised into groups and sub groups • Know how data can be structures as a tree • Know how data can be organised into a table • Know how data in a table can be filtered and searched
	<p>Skills</p> <ul style="list-style-type: none"> • Can sort and classify a group of items by answering questions • Can collect data using tick charts or tally charts • Can take, edit and enhance photographs • Can use Google Streets or Microsoft Excel to produce basic charts • Can record information on a digital map • Can summarise what they have learnt in a presentation
Birch 2/3/4	<p>Knowledge</p> <ul style="list-style-type: none"> • Know some elements of survey design e.g the questions used, the layout and accessibility • Know some ethical and legal aspects of online data collection – data protection, only collecting personal information that is required for your purpose. <p>Skills</p> <ul style="list-style-type: none"> • Can use the Internet to faciliate data collection • Can use charts to analyse data • Can interpret results
	<p>Knowledge</p> <ul style="list-style-type: none"> • Know different measurement techniques for weather – both analogue and digital (rainfal with a measurement flask, temperature using a thermometer etc) <p>Skills</p> <ul style="list-style-type: none"> • Can use computer-based data logging to automate the recording of some weather data • Can use spreadsheets to create charts • Can analyse data. • Explore inconsistencies in data and make predictions • Can practise using presentation and video software
	<p>Skills</p> <ul style="list-style-type: none"> • Can explore real-world and imagined locations in VR • Can create 360 degree photosphere images • Can link physical objects to digital conentent using QR codes • Can create their own VR scene • Can program objects and interactions in VR
Willow 4/5/6	<p>Skills</p> <ul style="list-style-type: none"> • Can explore real-world and imagined locations in VR • Can create 360 degree photosphere images • Can link physical objects to digital conentent using QR codes • Can create their own VR scene • Can program objects and interactions in VR

	<ul style="list-style-type: none"> • Can manage/contribute to large collaborative projects, facilitated using online tools • Can write and review content • Can source digital media while demonstrating safe, respectful and responsible use • Can design and produce a high-quality print document
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Generic skills	
Computer skills	
Stage	Skills
1	<ul style="list-style-type: none"> • Log on • Move the mouse with some control to point and click • Use the mouse to click and drag • Right click using the mouse and uses the mouse pad on a laptop • Can use a keyboard • Save work in a folder • Find the letters in name on a computer keyboard and type name • Can name, save and retrieve their work (open a file) • Can follow simple instructions to access online resources • Can add text and change the colour, font and size
2	<ul style="list-style-type: none"> • Are confident when creating, naming, saving and retrieving content • Can add appropriate clipart, photos • Can carry out simple searches to retrieve digital content. • Read and respond to e-mails • Send an e-mail using an address book • Add an attachment to an e-mail. • Download and attachment from an email • Can rename, move and delete a file
3	<ul style="list-style-type: none"> • Apply filters when searching for digital content • Know file and directory structures (folders, cloud, storage etc)

E-safety	
Year	Knowledge
Oak EYFS	<ul style="list-style-type: none"> • Can identify some simple examples of personal information (name, address, birthday and age for example) • Can identify rules that help keep people safe and healthy in and beyond the home when using technology. • Can say 'no' / 'please stop' / 'I'll tell' / 'I'll ask' to somebody who asks them to do something that makes them feel sad, embarrassed or upset. • Can describe ways that some people can be unkind online (saying unkind things). • Can recognise some ways in which the internet can be used to communicate (newsletters, up-coming events, achievements, homework) • Can talk about how to use the internet to find things out. • Can identify devices they could use to find things out (computer, phone, ipad)
Oak Year 1	<ul style="list-style-type: none"> • Know that there may be people online who could make them feel sad, embarrassed or upset. • Can explain why it is important to be considerate and kind to people online. • Can describe how to behave online in ways that do not upset others and can give

	<p>examples</p> <ul style="list-style-type: none"> • Can describe what information should not put online without asking a trusted adult first
<p>Birch 2/3/4</p>	<ul style="list-style-type: none"> • Know the implications of inappropriate searches • Know how to report inappropriate content to their teacher If something happens that makes them feel sad, worried, uncomfortable or frightened • Can give examples of when and how to speak to an adult I can trust. • Can explain why it is important to be considerate and kind to people online. • Can recognise that information can stay online and could be copied • Understand the importance of staying safe when using email • Know more than one way to report unacceptable content and contact. • Can talk about ways in which and why they might change their identity depending on what they're doing online (e.g. gaming; using an avatar; social media). • Can give examples of technology specific forms of communication (e.g. emojis, acronyms, text speak). • Can recognise why they need to be careful before sharing anything about themselves or others online. • Can explain the difference between bullying and cyber-bullying. • Can explain why spending too much time using technology can sometimes have a negative impact on them. • Can give reasons why they should only share information with people they choose to and can trust.
<p>Willow 4/5/6</p>	<ul style="list-style-type: none"> • Can explain how online identity can be different to the identity we present in 'real life' • Can explain how identity online can be copied, modified or altered. • Can explain ways that some of the information about me online could have been created, copied or shared by others. • Can explain how they are developing an online reputation which will allow other people to form an opinion of them. • Can recognise when someone is upset, hurt or angry online. • Can identify some online technologies where bullying might take place. • Can describe how to capture bullying content as evidence (e.g. screengrab, URL, profile) to share with others who can help them. • Can explain how using technology can distract from other things they might do or should be doing. • Can describe ways in which media can shape ideas about gender • Can describe common systems that regulate age-related content (e.g. PEGI, BBFC, parental warnings) and describe their purpose. • Can assess selected webpages for credibility and information at a basic level. • Can use key phrases in search engines. • Can explain what auto-complete is and how to choose the best suggestion. • Can create and use strong and secure passwords. • Can explain how many free apps or services may read and share private information with others. • When searching on the internet for content to use, can explain why they need to consider who owns it and whether they have the right to reuse it.

Appendix 1 – Finding and evaluating technologies

The following questions are embedded: -

Class	Question
KS1	"Here are 2 (or more) apps/packages to solve this problem/achieve this outcome. Which is the better/best and why?"
KS2	"Here's a problem to solve/task to complete - you decide the software/technologies to use. Evaluate how effective your choices were in helping you to solve the problem/complete the task."

Appendix 2 – Criteria for evaluation

- Apps/software are introduced as identified in SwitchedOn Computing.
- Children are taught how to find other programs/websites/apps that may do the same job e.g. using Google searches.
- Children are taught the following criteria for evaluation.
 - Accessibility - How easy is it to find/access?
 - Intuitiveness - How easy is it to use?
 - Functionality - What can/can't you do with it?
 - Success - Does it enable you to complete the task?
 - Output - Can you publish your work in a format that is useful?

Appendix 3 – Links with other subjects

Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems: -

- natural systems: e.g. DNA, ecosystems, water cycle, lifecycles
- artificial systems: e.g. micro technology, GM crops, Borlaug wheat

Key Stage	Examples
Key Stage 1	Natural – life cycles Artificial – shapes, patterns with numbers in nature
Lower Key Stage 2	Natural - water cycle, ecosystems, shape drawing using a Turtle (link to maths) Artificial - Borlaug wheat
Upper Key Stage 2	Natural - DNA (Y6 science) - adaptation and evolution and sex education; Fibonacci- the Golden Mean and natural world ratios and geometry Artificial - gene selection (PSHE) and manipulating gene structures

Appendix 4 – Glossary

Vocabulary	Meaning
Algorithm	An unambiguous procedure or precise step-by-step guide to solve a problem or achieve a particular objective
Computer networks	The computers and the connecting hardware (wifi access points, cables, fibres, switches and routers) that make it possible to transfer data using an agreed method ('protocol')
Control	Using computers to move or otherwise change 'physical' systems. The computer can be hidden inside the system or connected to it
Data	A structured set of numbers, representing digitised text, images, sound or video, which can be processed or transmitted by a computer
Debug	To detect and correct the errors in a computer program
Digital content	Any media created, edited or viewed on a computer, such as text (including the hypertext of a web page), images, sound, video (including animation), or virtual environments, and combinations of these (i.e. multimedia)
Information	The meaning or interpretation given to a set of data by its users, or which results from data being processed
Input	Data provided to a computer system, such as via a keyboard, mouse, microphone, camera or physical sensors
Internet	The global collection of computer networks and their connections, all using shared protocols (TCP/IP) to communicate
Logical reasoning	A systematic approach to solving problems or deducing information using a set of universally applicable and totally reliable rules
Output	The information produced by a computer system for its user, typically on a screen, through speakers or on a printer, but possibly through the control of motors in physical systems
Program	A stored set of instructions encoded in a language understood by the computer that does some form of computation, processing input and/or stored data to generate output
Repetition	A programming construct in which one or more instructions are repeated, perhaps a certain number of times, until a condition is satisfied or until the program is stopped
Search	To identify data that satisfies one or more conditions, such as web pages containing supplied keywords, or files on a computer with certain properties
Selection	A programming construct in which the instructions that are executed are determined by whether a particular condition is met
Sequence	To place programming instructions in order, with each executed one after the other
Services	Programs running on computers, typically those connected to the internet, which provide functionality in response to requests; for example, to transmit a web page, deliver an email or allow a text, voice or video conversation
Simulation	Using a computer to model the state and behaviour of real-world (or imaginary) systems, including physical and social systems; an integral part of most computer games
Software	Computer programs, including both application software (such as office programs, web browsers, media editors and games) and the computer operating system. The term also applies to 'apps' running on mobile devices and to web-based services
Variables	A way in which computer programs can store, retrieve or change simple data, such as a score, the time left, or the user's name
World Wide Web	An information system on the internet which allows documents to be connected to other documents by hypertext links, enabling the user to search for information by moving from one document to another.