VPS Computing Units

		Y1	Y2	Y3	Y4	Y5	Y6
Autumn	IT	**Information technology in the home.**	**How information technology is used for purpose at home and in the wider world.**	**What is the internet and how does it work?**	**What is the difference between the internet and the World Wide Web?**	**What is a network and how does it work?**	**How are the internet and networks used for collaboration and communication?**
	IT	**Taking photographs and videos.**	**'Record and Play' videos**	**Animation – Stop motion drawings**	**Animation – Stop motion using 3D models**	**Film Trailers**	**Short Films**
Spring	CS	**Bee-bots:** Inputting instructions to explore what happens.	**Bee-bots:** writing, predicting and debugging algorithms.	**Scratch Junior:** Creating code to manipulate a sprite to reach a specific goal.	**Scratch:** Creating an interactive quiz with input and output messages.	**Scratch:** Creating a computer games with input and output messages/controls.	**Hopscotch:** Creating a computer game using skills and knowledge from previous units of work.
	IT	**Digital Art**	**Manipulating digital photographs**	**Blogging and vlogging**	**Email**	**Podcasting**	**Website creation**
Summer	CS	**Bee-bots:** exploring, predicting and debugging algorithms.	**Scratch Junior:** exploring algorithm blocks to manipulate a sprite.	**Scratch:** Creating an algorithm to manipulate a sprite, e.g. move, spin, change colour, etc.	**Scratch:** Creating a computer games with objectives and output messages.	**Scratch:** Creating a computer game with selection and variables.	**Sphero robots:** Creating algorithms for Sphero robots.
	IT	**Sorting and grouping data**	**Organising and presenting data**	**Branching databases**	**Datalogging**	**Storing and presenting information using graphs and charts**	**Spreadsheets and formulae**

EYFS Objectives:

- Knows how to operate simple equipment, e.g. turns on CD player and uses remote control.
- Shows an interest in technological toys with knobs or pulleys, or real objects such as cameras or mobile phones.
- Shows skill in making toys work by pressing parts or lifting flaps to achieve effects such as sound, movements or new images.
- Knows that information can be retrieved from computers
- Draw young children's attention to pieces of ICT apparatus they see or that they use with adult supervision.
- Completes a simple program on a computer.
- Uses ICT hardware to interact with age-appropriate computer software.
- Early Learning Goal: Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes.

VPS Computing Units

Computer Science	
NC Objectives: *Use logical reasoning to predict the behaviour of simple programs.* *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.*	*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.*

**All classes use 'Seesaw' to upload evidence of their computing learning.*

Y1	Y2	Y3	Y4	Y5	Y6
Algorithms: Children input step-by-step instructions (an **algorithm**) into a Bee-bot and explain what happens. They explore **logical** paths for the Bee-bot to take to reach an objective and make **predictions about** what will happen whilst offering solutions to problems (**debug**).	**Algorithms:** Children write precise **algorithms** for a Bee-bot to reach a specific goal. They **predict** what will happen and **Debug** incorrect **algorithms,** rewriting them to solve the problem. Using Scratch Junior to introduce children to digital coding blocks. **Write** and **debug** algorithms using Scratch Junior to manipulate a sprite.	**Design, write and debug programs:** Using Scratch Jnr, the children create an **algorithm** to manipulate a sprite to reach a certain goal using **logic**. Moving from Scratch Jnr to Scratch, the children create **repeating algorithms** to make a sprite move, change colour, dance, etc.	**Design, write and debug programs:** Creating a **sequenced** interactive quiz on Scratch, with typing for **input** and messages for **output,** whilst exploring **decomposing algorithms** to identify errors. Creating a simple computer game with **selective** objectives and **output** messages.	**Design, write and debug programs:** Creating an interactive computer game with different **input** controls and **output** messages – e.g. a talking animal. Creating a computer game on Scratch with **selection** and **variables** (e.g. timer/score) whilst using **logic** in their game design.	**Design, write and debug programs:** Creating an interactive computer game, applying previous skills and knowledge to a different app, such as Hopscotch. Creating **algorithms** for Sphero robots, exploring decomposing algorithms to debug errors and offer solutions.

VPS Computing Units

Information Technology

NC Objectives: *Use technology purposefully to create, organise, store, manipulate and retrieve digital content.* *Recognise common uses of information technology beyond school.*	*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.*

**All classes use 'Seesaw' to upload evidence of their computing learning.*

Y1	Y2	Y3	Y4	Y5	Y6
Creating Media *Using the 'Brushes Redux' app to create art, comparing this with non-digital artwork.* ***Creating Media*** *Using the camera on a device to explore taking photographs and videos.* ***Data and Information*** *Exploring objects and their labels, then sort and group them using their properties.* ***Computer systems and network project:*** *Identifying **information technology** in the home and at school. E.g. 'which things are connected to the **internet** and which are not?'*	***Creating Media*** *Capturing and manipulating digital photographs using an iPad camera and editing software.* ***Creating Media*** *Using record and play techniques to create a short video.* ***Data and Information*** *Collecting data then using an app or program to organise and store it.* ***Computer systems and network project:*** *How is **information technology** used for purpose at home and in the wider world?*	***Creating Media*** *Using an app or website to blog/vlog about current events or a researched topic.* ***Creating Media*** *Creating a stop-motion animation video using digital drawings.* ***Data and Information*** *Building and using branching databases to answer yes/no questions.* ***Computer systems and network project:*** *What is the **internet**? How does it work?*	***Creating Media*** *Using email to send and receive information safely across a network and understand how to do this safely.* ***Creating Media*** *Creating a stop-motion animation video using objects.* ***Data and Information*** *Storing information in a database overtime using a data logging app, such as Arduino Science Journal.* ***Computer systems and network project:*** *What is the difference between the **internet** and the **World Wide Web**?*	***Creating Media*** *Using an iPad to record a researched podcast about current events or a topic and share with the school community.* ***Creating Media*** *Planning and creating a movie trailer using iMovie.* ***Data and Information*** *Collecting, storing and organising data in a spreadsheet database, then presenting the information in charts and graphs.* ***Computer systems and network project:*** *What is a **network** and how does it work? (E.g. networks at home/in school/in a place of work)*	***Creating Media*** *Designing and creating a website on Wordpress to share and discuss ideas and topics.* ***Creating Media*** *Planning and creating a short film using iMovie.* ***Data and Information*** *Using spreadsheets to organise and store data, using simple formulae to manipulate it.* ***Computer systems and network project:*** *How are **networks** and the internet used for communication and collaboration?*

**Project work can be presented in a variety of different digital formats: videos/movies, audio, graphics/images, publishing, presentations, animation, AR, etc*

VPS Computing Units

Digital Literacy and Online Safety

NC Objectives: *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.*	*Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.*

Digital Literacy is taught throughout our whole-school computing curriculum. Every computing lesson is an opportunity to teach key digital literacy skills. These skills are always taught alongside other subjects in the curriculum through meaningful cross-curricular links, through our RRS work and our PSHCE lessons.

Key Digital Literacy Skills:

- *Use a variety of different technology safely and respectfully.*
- *Understand how and where to go for help and support.*
- *Use technology to create and present ideas.*
- *Be creative with different technology tools, apps and programs.*
- *Search/retrieve specific information using a knowledge of online search engines and present it using a variety of multimedia tools.*
- *Combine multimedia in different ways for a specific purpose.*
- *Use technology to organise, sort and present ideas.*
- *Save, open, print and upload/share files across a network.*
- *Input, organise, manipulate, present, share and discuss collected data.*
- *Use keyboard commands and evaluate these to improve effectiveness.*

VPS Computing Units

Online Safety

At valewood, we use the Education for a Connected World (2020) document to support our online safety policy.

We use the milestones from each of the eight key areas to support our EYFS, Key Stage 1 and Key Stage 2 children in their computing lessons.

The eight key areas:

- **Self-image and identity**
- **Online relationships**
- **Online reputation**
- **Online bullying**
- **Managing online information**
- **Health, well-being and lifestyle**
- **Privacy and security**
- **Copyright and ownership.**

Each class teacher has a copy of this document and they use one lesson of each computing block to focus on the milestones, as well as weaving them throughout each teaching sequence.

This is also supported through the children's PSHCE and Rights Respecting Schools work and regular Online Safety themed assemblies.

Our community is also regularly updated with information linked to this document through our social media channels.

VPS Computing Units

Computing Vocabulary Glossary

KS1	KS2
Algorithm - an unambiguous procedure or precise step-by-step guide to solve a problem or achieve a particular objective. **Logical reasoning -** – a systematic approach to solving problems or deducing information using a set of universally applicable and totally reliable rules. **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 technology –** the study or use of systems (especially computers and telecommunications) for storing, retrieving, and sending information. **Predict –** to estimate the performance of a program on a given **computer**. **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. **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.	**Controlling -** using computers to move or otherwise change 'physical' systems. The computer can be hidden inside the system or connected to it. **Computer networks -** the computers and the connecting hardware (Wi-Fi access points, cables, fibres, switches and routers) that make it possible to transfer data using an agreed method ('protocol'). **Data -** a structured set of numbers, representing digitised text, images, sound or video, which can be processed or transmitted by a computer. **Decomposing –** It involves breaking down a complex problem or system into smaller parts that are more manageable and easier to understand. The smaller parts can then be examined and solved, or designed individually, as they are simpler to work with. **Input -** data provided to a computer system, such as via a keyboard, mouse, microphone, camera or physical sensors. **Output -** the information produced by a computer system for its user, typically on a screen, through speakers or on a printer, but possibly though the control of motors in physical systems. **Internet -** the global collection of computer networks and their connections, all using shared protocols (TCP/IP) to communicate. **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. **Sequence -** to place programming instructions in order, with each executed one after the other. **Selection -** a programming construct in which the instructions that are executed are determined by whether a particular condition is met. **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 -** 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. **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 -** World Wide Web – a service provided by computers connected to the internet (web servers), in which pages of hypertext (web pages) are transmitted to users; the pages typically include links to other web pages and may be generated by programs automatically. **Search technology -** – Using search bars to identify data that satisfies one or more conditions, such as web pages containing supplied keywords, or files on a computer with certain properties. **System -** A **computer system** is a basic, complete and functional hardware and software setup with everything needed to implement **computing** performance.