Bradwell Village School

Computing Framework

	Autumn			
	Year Three	**Year Four**	**Year Five**	**Year Six**
Objectives	**iSafe**: eSafety To recognise when something encountered online does not feel right. To identify some of the risks of sharing publicly online. To understand some measures that can be taken to stay safe. To raise awareness about appropriate and inappropriate content for online sharing. To understand potential consequences of sharing without consent. To understand some of the ways we can protect ourselves online against manipulation. To understand the ways the internet can make young people feel about themselves. To understand the need for strong passwords. To identify several different forms advertising can take online.	**iSafe**: eSafety To learn about the benefits of sharing information online. To understand what type of information can put them at risk. To distinguish between personal and private information. To empathise with those who have received hurtful messages. To judge what it means to cross the line from harmless to harmful. To generate solutions for dealing with cyberbullying. To experiment with different keyword searches. To refine searches by using multiple words, synonyms and alternative words. To draw inferences to explain their search results. To know what plagiarism is and its consequences. To explain how giving credit is a sign of respect for people's work. To explain when it is acceptable to use someone else's work and how to write a citation. To identify the characteristics of strong passwords.	**iSafe**: eSafety To explore and identify methods of communication. To understand why people communicate. To understand the risks and benefits of various modes of communication. To explore the ways in which pupils communicate. To understand the concept of personal and private information. To understand safety rules and responsible behaviour when using new technologies. To explore how and why we share information, give information and receive information. To understand the concept of personal safety in real life and online. To understand the concept of personal and private information. To understand safety rules and responsible behaviour when using new technologies. To understand the concept of personal safety in real like and online. To learn the SMART rules for when using the internet.	**iSafe**: eSafety To recognise the importance of never sharing passwords (except with parents or guardians). To understand the importance of screen locks that protect devices. To know how to create passwords that are hard to guess, yet easy to remember. To choose the right security for their login settings, including two-factor verification To customise privacy settings for the online services they use. To make decisions about information sharing on the sites and services they use. To understand what two-factor and two-step verifications mean and when to use them. To put what they have learnt about privacy and security into practice. To identify situations of harassment and bullying online. To evaluate what it means to be a bystander or upstander online. To learn specific ways to respond to bullying. To know how to behave if experiencing harassment.

		To apply characteristics of strong passwords to create new passwords. To create secure passwords with family members. To define what spam is. To explore strategies for safely managing unwanted messages. To identify different forms of spam To compare and contract online-only friends and in-person friends. To analyse why private information should not be given to anyone online without the permission of a trusted adult. To debate how to respond if an online-only friend asks them personal questions. To empathise with the targets of cyberbullying. To recognise some of the key similarities and differences between in-person bullying and cyber-bullying. To identify strategies for dealing responsibility with cyberbullying. These LO's will be covered in Computing and PSHE .	To explore the difference in communicating face-to-face and online. To explore the validity of online content. To begin to make sensible and considered judgements about whether or not to trust it. To compare and contrast different sources of information. To explore the difference in communicating face-to-face and online. To understand how to chat sensibly and safely. To begin to make sensible and considered judgements about whether or not to trust online content and people when online. To compare and contract different sources of information. To explore the difference in communicating face-to-face and online. To define cyberbullying. To explore the differences and similarities between cyber bullying and more traditional bullying. To identify different forms of cyber bullying. To understand what to do if confronted with cyber bullying.	To see that being an upstander is a choice. To learn that there are different ways to intervene. To choose how to respond in a way that is safe and appropriate. To create own responses to a situation To express feelings and opinions in a positive, effective way. To respond to negativity in constructive and civil ways. To make good decisions when choosing how and what to communicate – and whether to communicate at all. To identify situations when it's better to wait to communicate face-to-face with a peer than to text them right away. To recognise that seeking help for oneself or others is a sign of strength. To think out loud together about situations where talking it out can really help. To be aware of online tools for reporting abuse. To consider when to use them. To talk about why and when to report abuse.
Vocabulary	Privacy settings, Online sharing, Consent, Strong password, Manipulation	Privacy settings , Keywords, Copyright, Strong, password, Spam, Virus, Cyberbullying	Personal information, Reliable, Cyberbullying, SMART, Safe, Meeting, Accepting, Reliable, Tell	Personal information, Reliable, Cyberbullying, Strong, password, Privacy settings, Customise, Harassment, Report abuse

Objectives	**iProgram** To understand that a program is a sequence of statements written in a programming language (Scratch). To program an animation that executes a sequence of statements. To understand that computer programs containing graphics use x y coordinates and turns are measured in degrees. To program a sequence of instructions to create visual effects. To import, create and record sounds. To understand that algorithms and programs can involve repetition. To predict the outcome of a simple algorithm/ To use a repeat function to draw a 2D shape. To import pictures from a computer/and or the internet. To combine images, sounds and movement to create a personal animation.	**iData:** Introduction to databases To represent data as numbers and count using switches of "on" and "off" (0 and 1). To sort record cards using field names. To understand that information can be stored as numbers, text and choices (e.g. yes/no). To understand that storing information in an organised way helps answer questions. To search a database to answer questions. To use the information in a database to create a simple chart	**iProgram** (Unit 1):Designing and developing programs To understand that computer programs containing graphics use x y coordinates and turns are measured in degrees. To use conditional (if) statements. To understand that some variables can only be true or false (Boolean). To create a game that senses events on screen. To program statements that make something happen in response to events on screen. To be able to understand what a variable is and why they are useful. To understand that variables can be used in programming to keep track of values. To program statements that make something happen in response to the value of a variable. To identify an appropriately scoped project. To develop an outline of tasks and activities required to develop a project. To use the computational concepts of sequence, selection, repetition and variables to program a computer game.	**iProgram** : Designing and developing programs To understand the difference between games and simulations. To identify the various inputs that computer games can use. To program a computer game by sequencing conditional statements. To understand that the behaviour of a computer program should be planned. To understand that programs are developed according to a plan. To program an algorithm to a plan.
Vocabulary	Program, Sequence, Selection, Repeat, Coordinates, X axis, Y axis, Import, Test, Debug	Binary, series, base, on, off, data, digital, database, chart,	Sequence, Selection, Condition, Repeat, Boolean, Variable, Coordinates, X axis, Y axis	Sequence, Selection, Condition, Repeat, Boolean, Variable, Procedure, Test, Debug
Objectives	**iSimulate**: Games and animation development To understand that computer simulations can represent real or imaginary situations. To understand that computer simulations are guided by rules.			

	To explore the effect of changing variables in a simulation using them to make and test predictions. To understand that simulations can help people try things quickly and inexpensively. To understand that stimulations help us understand difficult concepts. To design and produce a computer simulation or adventure game.			
Vocabulary	Simulation, Rules, Choice, Variables			

	Spring			
	Year Three	**Year Four**	**Year Five**	**Year Six**
Objectives	**iData**: Introducing databases To understand how information in a database is organised. To understand the advantages of a computer-based database over a paper one. To find and enter information to create additional records in a database To demonstrate the knowledge skills and understanding they have learned during this unit.	**iProgram**: Making shapes and navigating mazes To understand that a program is a sequence of statements written in a programming language (Turtle Art). To program a turtle to execute a sequence of statements. To understand that a computer programs consist of statements that perform a specific task. To understand that statements can be altered. To amend an algorithm to change the size of a shape. To program a virtual robot to move and draw. To design a program that makes choices. To understand that commands and actions can be programmed to be executed depending if a condition is true or not	**iCrypto**: Cryptography To understand that messages can be sent and received secretly. To learn how to encrypt/decrypt simple messages. To understand signalling is a form of communication. To communicate simple messages through signals. To understand that messages can be sent electronically over distances. To understand that data can be transmitted as binary (on or off). To encode and decode Morse code. To understand that messages have been encrypted/decrypted throughout time. To encode/decode messages using a simple shift cipher. To understand the algorithm of a simple shift cypher.	**iData**: Introducing spreadsheets To identify some parts of a spreadsheet. To identify cell references. To understand that spreadsheets can be used to store numerical data and to make calculations. To understand that recalculations with different values can be done quickly. To enter a formula to calculate totals. To enter numerical data into cells. To understand that graphs and charts can be created and easily be changed from spreadsheet data. To understand that SUM function can be used to create formulas that will perform addition calculations. To use spreadsheets to model a costing exercise.

			To use frequency analysis to decipher encrypted text. To understand the importance of cryptography historically and today. To understand how the Enigma Machine operates.	
Vocabulary	Simulation, Rules, Choice, Variables	Program, Sequence, Selection, Condition, Repeat, Repetition, Test, Debug	Cryptography, Encrypt, Decrypt, Cipher, Key, Shift, Binary, Frequency analysis	Spreadsheet, Data, Numerical, Calculations, Sum, SUM function
Objectives		**iMail**: Working together with email To understand that messages can be used to communicate over distance a number of ways. To understand how email travels and how to retrieve it. To send and reply to emails. To attach a file to an email. To understand the advantages of attaching files to emails. To use email to communicate ideas.	**iWeb**: Exploring web design and construction To understand that the world wide web is one of the services offered on the internet. To know that the world wide web consists of many websites and web pages can be accessed using the internet. To understand that many people remix content to work on the world wide web. To know that websites are written in HTML. To read basic HTML code To use research for the creation of a website	**iNetwork**: Networks, data and HTML/CSS To understand that a computer network is a group of computers that are connected. To know that computer networks allow users to communicate and share. To understand that the internet is many networks that are connected to each other. To know that a router sends/receives information as packets of data. To know that computers connected to the internet have their own address. To understand that services involving web pages on the internet are known as the World Wide Web and that websites can be traced to a particular webserver. To know that internet search engines maintain, and rank, a list (or index) of other website available on world wide web. To clear search terms when conducting internet searches in order to find things out. To know that web pages are written in HTML.

				To recognise and use basic HTML syntax.
Vocabulary		Email, Email address, To, From, Attachment, Forward	World Wide Web, Hypertext Markup Language (HTML), Cascading Style Sheets (CSS), Element, Tags	Network, Router, Internet, World Wide Web, IP, address, Uniform Resource Locator (URL), Data, Packet, Search engine, Rank, Hypertext Mark-up Language (HTML)
Objectives				**iProgram** To develop a program according to a plan. To develop strategies for testing and debugging computer programs.
Vocabulary				Sequence, Selection, Condition, Repeat, Boolean, Variable, Procedure, Test, Debug

	Summer			
	Year Three	**Year Four**	**Year Five**	**Year Six**
Objectives	**iNetwork**: introducing networks To understand what a network is. To know key part of a computer network. To understand how information is exchanged between devices. To understand that the internet is physical connections between computers and networks. To understand how data travels throughout a network. To understand that devices on networks have a unique address.	**iProgram** (Unit 3): Programming puzzle solutions **iProgram** Data representation To develop algorithms. To combine repetition and conditional statements into a program To solve problems by splitting them into smaller parts (decomposition). To plan and develop algorithms and programs. To understand that procedures in computer programs allow programmers to use a set of commands (abstraction).	**iDraw:** Exploring how images are made from shapes and lines. To understand that digital tools can be used to create images To understand that vector images are made up of shapes and lines To use digital tools to improve detail in images To understand that vector images are constructed of layers To design and create vector images	**iProgram** (Unit 2): Developing 3D animations To add an object to a scene. To add simple program instructions. To use procedures to move objects on screen. To test and debug an animation. To simplify a program using procedures. To use conditional statements. To understand and use variables in a computer program. To use decomposition to devise a storyboard for an animation. To develop an animation. To test and debug an animation.
Vocabulary	Network, Network switch server, Wireless access point (WAP), WiFi, Router, Internet IP Address, URK, DNS	Program, Sequence, Selection, Condition, Repeat, Repetition, Test, Debug Data, Database, Record, File, Field, Search, Sort, Search, Chart	Vector, area, canvas, group, resize, design, evaluate	Sequence, Selection, Condition, Repeat, Boolean, Variable, Procedure, Test, Debug
Objectives	**iConnect**: Internet, Searching and WWW To understand that the internet is many computers that are connected. To understand some of the services available on the internet.	**iAnimate**: Introduction to animation To storyboard and create a short animation.	**iProgram** (Unit 2): Developing multi-level games To learn how to create a world and create a character. To use conditional statements in computer programs (When…Do…)	**iApp** (Unit 2: Developing apps To understand the value of mobile technology and its future development. To explore event-driven programming using a text-based programming language.

	To understand that you can move around the web using hyperlinks. To use basic navigation skills to browse the world wide web. To know the main features of web browsers. To understand how to find information using a search engine. To use search terms when looking for information using a search engine. To understand that not all information on the web is reliable. To know the basic steps that can help distinguish safe and credible websites.		To program an object to move towards another by sequencing statements. To amend a computer program to accept use input. To program objects to move along paths. To understand how to create "levels" in a computer game. T To understand that computer programs need to be designed. To know what to think about when designing a computer program To program a computer game using design and plan as a basis To develop strategies to testing and debugging computer programs	To understand the importance of decomposition (breaking a problem into smaller parts and solve one part at a time). To understand the event-driven nature of Bitsbox programming. To understand that variables contain values. To use algorithms to develop a solution to a program. To translate algorithms into code. To use abstraction and functions in programs. To understand that apps are computer programs that are developed according to a plan. To develop an app according to a plan. To develop strategies for testing and debugging computer programs.
Vocabulary	World Wide Web, Network, Internet, Hyperlink, Search, URL, IP address, Web browser, Copyright	Animation, Frame, Frame rate, Frames per second (FPS), Computer generated imagery (CGI)	Sequence, Selection, Condition, Repeat, Boolean, Variable, Coordinates, X axis, Y axis	Events, debug, conditional, commands, syntax, commands, mobile, input, output, design, algorithm, pseudo-code, abstraction, interface, decomposition, parameters
	iDo We Do: Robotics (optional)	**iDo We Do**: Robotics (optional)		

Note: Grey areas indicate links to PSHE curriculum.