COMPUTING

Our computing curriculum follows the five strands as defined by Curriculum Innovation (see https://www.ticbradford.com/).

Contents

Please note that **computing** has been completely removed from the EYFS curriculum framework.

National Curriculum Objectives

The ways in which the five strands cover the National Curriculum objectives are summarised in the table below:

	Computer Science	Data Handling	Media	(e)Safeguarding	Information Literacy
Key Stage 1					
KS1: Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. [**COM1]**					
KS1: Create and debug simple programs. [**COM2**]					
KS1: Use logical reasoning to predict the behaviour of simple programs. [**COM3**]					
KS1: Use technology purposefully to create, organise, store, manipulate and retrieve digital content. [**COM4**]					
KS1: 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. [**COM5**]					
KS1: Recognise common uses of information technology beyond school. [**COM6**]					
Key Stage 2					
KS2: Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. [**COM7**]					
KS2: Use sequence, selection, and repetition in programs; work with variables and various forms of input and output. [**COM8**]					
KS2: Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. [**COM9**]					
KS2: 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. [**COM10**]					
KS2: Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. [**COM11**]					
KS2: 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. [**COM12**]					
KS2: Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. [**COM13**]					

Strand 1: Computer Science

YEAR 1 (Computer Science)

KS1 National Curriculum Links: 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. Recognise common uses of information technology beyond school.

	Outcomes	Description
1C1	Understand what an algorithm is.	Know that an algorithm is a series of instructions, commands or rules. Work through appropriate activities to show algorithms in everyday life broken into a series of commands/instructions.
1C2	Understand that digital devices work using programs.	Explore a range of toys and devices such as remote control toys and Bee-Bots to understand they can be controlled by a single or series of commands/instructions (algorithm). Understand the individual commands such as forward and turn. Explore outcomes when individual buttons are pressed on a programmable device or icons/objects are clicked on a computer screen.
1C3	Control devices through a series of clear and accurate algorithms to achieve a predefined outcome.	Identify and combine a series of commands to create an algorithm to control a real or virtual device. Discuss solutions as a group. Understand the need to be accurate when describing an algorithm and the importance of ordering commands in the correct sequence. What would the outcomes be if the commands in an algorithm were in a different sequence?
1C4	Recognise common uses of technology beyond school. For example programming Sky box or using a washing machine or microwave.	Have experiences of controlling other devices such as sound recording devices, music players, video recording equipment and digital cameras, iPods, iPads, TV recording devices controls, Wiis, Xbox Kinect, Dance mats. Explore the use of technologies beyond school.
To deepen understanding: Independently debug commands to correct mistakes in algorithms.		

YEAR 2 (Computer Science)

KS1 National Curriculum Links: 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. Recognise common uses of information technology beyond school.

	Outcomes	Description
2C1	Understand that real and virtual devices can be controlled by sequences of commands.	Children are encouraged to explore and play with a range of virtual and physical programmable devices and discuss what they have learnt. Children share how they have controlled these devices in different ways.
2C2	Plan a set of commands to achieve a specific outcome.	Discuss examples of instructions for everyday situations and ensuring the individual steps are accurate and sequenced correctly to create an algorithm. Describe the use of controlling devices through a series of commands such as navigating to a program/app or a shared drive on the school network.
2C3	Predict the outcome of an algorithm using logical reasoning.	Provide children with simple predefined algorithms and they have to predict the outcome of executing that algorithm. Predict the path drawn by a programmable device by analysing a series of commands (algorithm).
2C4	Control devices through a series of commands.	Combine a series of commands into a single algorithm to control a real or virtual device to carry out a pre-determined route. Make predictions and estimate distances and turns.
2C5	Write, test and debug simple programs.	Create and test algorithms to achieve a range of specific outcomes to achieve given and chosen outcomes. Understand that trial and error is an expected part of the programming process. Children independently evaluate their programs and debug them as required.
2C6	Understand the benefits of using technology beyond school.	Compare and discuss solutions with others. Explain to others the benefits of using a range of technology beyond school. What are the benefits of these technologies on our lives such as supermarkets, libraries, cinemas, restaurants, etc.?
To deepen understanding: Add repetition to their programs.		

YEAR 3 (Computer Science)

KS2 National Curriculum Links: 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.

	Outcomes	Description
3C1	Create, refine and debug a series of commands for virtual programmable devices.	Plan, input and execute a series of commands using age appropriate programs and apps. Introduce and use repetition commands to create more efficient programs for example creating 2D shapes. Review and improve their algorithms. Share their algorithms with others and discuss which algorithms are the most efficient/effective and why?
3C2	Understand and identify simple input and outputs.	Discuss the concepts of inputs and outputs in the real world such as remote controls, traffic lights, barcode readers, mice, keyboards, touchscreens, etc. Discuss that each of these inputs and outputs are controlled through programming algorithms.
3C3	Create simple programs combining inputs and outputs.	Discuss how previous programs have been executed by a single input command and that more complex programs can be created that incorporate inputs such as a touchscreen, keyboard or mouse. Children create programs to control onscreen objects using a variety of input methods. Understand that the output is the defined action triggered by the input.
3C4	Use repetition in programs to write code using the least number of lines and improving efficiency.	Look at examples of real life instructions and code where the same command is carried out multiple times and how we can replace this series of repeated commands with a shorter or single command. Explore forever and until loops in real life and in their coding. Create algorithms using repetition that allow the same outcome to be achieved more efficiently.
To deepen understanding: Use selection in their coding (if X happens then do Y).		

YEAR 4 (Computer Science)

KS2 National Curriculum Links: 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.

	Outcomes	Description
4C1	Understand and explore different game genres and what makes a good game.	Talk about the various games they play and explore a range of games available in school and identify the key features of these games. What features are common to the games? Identify some common genres of games such as a quiz, driving games, etc.
4C2	Understand that games, apps and web content are made of code.	Look at a variety of games, apps and web content where access to the code is available. Understand that there are different languages and types of codes. Begin to identify what parts of the code do and alter them to see the changes.
4C3	Debug existing code to improve it.	Debug a series of commands containing deliberate mistakes.
4C4	Design and code a simple game.	Use the information they have learnt about features of specific game genres to plan their own simple game for example character movement, scoring and other objects. Create and refine code to control the behaviour of the various characters and objects.
4C5	Use selection in their coding.	Understand the concept of selection (if X happened do Y) and examine examples of this. Use selection in their game to allow characters and objects to interact.
4C6	Transfer existing coding skills between applications.	Understand the basic principles and skills learnt through coding in one application apply this understanding to another application. For example sequencing commands appropriately and including selection (if X happened do Y).
To deepen understanding: Independently create a program based around a theme that uses more than one example of selection.		

YEAR 5 (Computer Science)

KS2 National Curriculum Links: 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.

	Outcomes	Description
5C1	Solve problems by decomposing them into smaller parts.	Decompose real life events down into smaller sub events and then break them into parts e.g. coming to school broken into getting up, getting washed, feeding etc. Break examples of games into parts and sub parts, movement, scoring, interaction with objects etc.
5C2	Convert lines of code into everyday language and vice versa.	Look at code in a program, discuss its meaning then write what it is trying to achieve in English. In planning their own programs children describe what is happening in English before converting to real code.
5C3	Understand and use variables.	Create a variable in a game e.g. the score or number of lives left.
5C4	Use selection in programming to create a game aimed at an audience.	Plan and create a game for a specified audience that contains more than one example of selection e.g. in a driving game if your car hits an odd number you lose five points if it hits an even number you gain ten points. Refine the game based on audience feedback in terms of appeal and difficulty.
5C5	To become familiar with inputs and outputs and create programs using them to control or simulate physical systems.	To identify input and output devices in real life (pelican crossing, traffic lights, smoke alarm) discuss how they function and understand that they are processed by a computer. Children create flow charts using software or on paper to explain how these systems work. Children then write algorithms to control input and output devices using real or virtual on screen devices.
5C6	Understand what networks (including the internet) are and how they are used to transfer information.	Children create simple diagrams (abstractions) of computer networks such as the one in school. They show how information is broken down into data packets when it is sent and reassembled when it is received. They illustrate how they use the internet for different services such as Skype, video streaming services, email and the world wide web.
To deepen understanding: Create a game with multiple levels of difficulty.		

YEAR 6 (Computer Science)

KS2 National Curriculum Links: 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.

	Outcomes	Description
6C1	To design, write and debug a program to solve a problem.	Describe a problem that needs solving. Plan program to solve it including written description of what the program will do and create drawings as part of the plan. Break program down into constituent parts and write a description of each part of the code in everyday English as an algorithm. Begin to build the game importing sound or graphics needed. Code the program adding selection, variables & repetition as appropriate. Design a feedback form for intended audience, collect feedback and refine the program where needed keeping notes of changes made.
6C2	Include more complex selection linked to variables to programs. Create a program where an event is triggered by a sensor.	Use variables for key elements of a program such as lives left, score, or a timer. Create at least one example where selection is linked to a variable such as if your score > 100 say “You win!” or if lives = 0 end the game. Make outputs react to conditions met by inputs that are sensors e.g. if it gets dark, turn lights on or if a sound is heard set off an alarm.
6C3	To understand that the internet is made up of networks of computers around the world that can provide multiple services.	Create a resource that explains the different services that are provided by the internet such as email, wikis, world wide web, video streaming, Skype, online gaming through consoles and all the devices that use the internet. Locate where web sites on the world wide web are hosted on a map using online tools.
To deepen understanding: Ensure their game can meet the needs of different players. Introduce Python (a textual programming language).		

Strand 2: Data Handling

YEAR 1 (Data Handling)

KS1 National Curriculum Links: Use technology purposefully to create, organise, store, manipulate and retrieve digital content.

	Outcomes	Description
1D1	Sort, organise and classify objects based on their properties.	Sort and group objects using a variety of criteria physically and using technology.
1D2	Represent and interpret simple data as pictograms.	Use an appropriate application to represent and interpret simple data as a pictogram. Use pictograms to create questions and help to answer them.
To deepen understanding: Develop more complex criteria (and or questions) to create their own pictograms. Start to change the data independently and comment on the effects of the change.		

YEAR 2 (Data Handling)

KS1 National Curriculum Links: Use technology purposefully to create, organise, store, manipulate and retrieve digital content.

	Outcomes	Description
2D1	Represent information as a simple block graph or pictogram.	Collect information and use it to create a simple pictogram or block graph using an application.
2D2	Organise and interpret data as a simple graph.	Use a simple graphing/pictogram application to record information and label the axes. Enter data accurately and edit mistakes. Use graphs to create and answer questions and understand that if data has not been entered accurately it cannot be used to provide the answers to questions.
2D3	Sort and answer questions using yes/no answers.	Ask questions that comply with the rule that it can only have a yes or no answer. Use a branching database to identify objects using yes or no questions.
To deepen understanding: Write questions based on a graph they have created.		

YEAR 3 (Data Handling)

KS2 National Curriculum Links: Collect, analyse, evaluate and present data and information using a variety of applications on a range of digital devices.

	Outcomes	Description
3D1	Collect and organise information to find answers to questions.	Compare interpreting data using analogue and digital methods.
3D2	Create different graphs that show data for different purposes across the curriculum.	Examine and interpret existing graphs related to different curricular subjects and create their own. Be able to answer questions from their graphs and begin to check data for accuracy.
3D3	Store and access data using a database.	Understand the terms field and record in a database. Use an existing standard database to answer questions.
To deepen understanding: Use the search function in a database.		

YEAR 4 (Data Handling)

KS2 National Curriculum Links: Collect, analyse, evaluate and present data and information using a variety of applications on a range of digital devices.

	Outcomes	Description
4D1	Represent data in a database using appropriate data types.	Enter data into a pre-defined database and use the information to answer a specific question. Place information in the correct fields using the correct conventions e.g. Text data in text fields Numeric data in number fields (be aware of spelling errors and case sensitivity whilst entering data). Begin to use sort, search and create graphs to interpret / question data.
4D2	Turn questions into search criteria and use database tools to find answers	Translate questions into search criteria to find information using the appropriate sort / search / graph facility of the software.
4D3	Use a spreadsheet to enter data and perform simple calculations.	Enter data accurately into a spreadsheet and understand cell references.
4D4	Convert data in a spreadsheet into different graph types for different purposes.	Use the spreadsheet to create bar or line graphs and pie charts with correctly labels axes and titles.
4D5	Change elements of a spreadsheet and understand the effects on other calculations.	Enter labels and numbers into a spreadsheet and use the 'SUM' function to calculate the total of a set of numbers in a range of cells. Use a prepared spreadsheet and manipulate the data to answer questions supporting work in mathematical / scientific investigations. Use a spreadsheet to model possible outcomes by adding and changing data.
To deepen understanding: Use more advanced search functions		

YEAR 5 (Data Handling)

KS2 National Curriculum Links: Collect, analyse, evaluate and present data and information using a variety of applications on a range of digital devices.

	Outcomes	Description
5D1	Create charts using appropriate data to interpret and answer a specific question.	Collect data (consider using an online quiz, survey or poll) and create correctly labelled graphs or charts for a specific purpose and add them to a relevant document or presentation.
5D2	Create a database to store and search relevant information.	Create a database to organise relevant data.
5D3	Interrogate a database using suitable questions.	Design questions using key words to search a large pre-prepared database. Use and / or / greater / less than (Boolean) to search and sort data when looking for relationships and patterns in data. Modify search criteria in order to find more specific information. Check for accuracy by checking data, using different views, search tools, and graphing.
5D4	Use technology to search and sift through large amounts of different types of information.	Examine a large database such as items offered by an online retailer or a Victorian census. Create paper cards for some records and sort them physically before doing so with technology.
5D5	Use a range of calculations and functions in a spreadsheet.	Enter formulae into a spreadsheet and modify the data. Paste formulae to enable the calculation of several sums simultaneously.
5D6	Use a spreadsheet to model given problems.	Change the data to answer 'what if...?' questions and check predictions. Create and use a spreadsheet to investigate possible solutions to mathematical / scientific problems / investigations. Create or use a prepared spreadsheet and manipulate the data to answer questions supporting work in mathematical / scientific investigations.
To deepen understanding: Organise data in an appropriate application and use appropriate complex searches/ sorts to find the answers to question or test hypothesis. Discuss how using formula in spreadsheets can enable them to test different variables.		

YEAR 6 (Data Handling)

KS2 National Curriculum Links: Collect, analyse, evaluate and present data and information using a variety of applications on a range of digital devices.

6D1	Identify and collect appropriate data to answer their questions.	Solve problems involving selecting, processing, presenting and interpreting data. Construct and interpret a range of appropriate tables and graphs relating to task. Collect and represent data using online quizzes, surveys or polls and posters including graphical representation of data (e.g. what are the differences in heart rates resting, during and after exercise).
6D2	Use data in an appropriate application to test a theory/hypothesis.	Present findings to outline a theory or hypothesis to a specified audience and display this information in appropriate applications (e.g. poster, multimedia, word processing).
6D3	Refine, search, filter, sort and graph data for purpose in a database or spreadsheet.	Collect and organise data in an efficient and accurate way by designing fields and records in a database. Sort, filter and present the data to answer questions.
6D4	Use a spreadsheet to create real life models of information to offer a solution to a real life problem.	Use spreadsheets to solve mathematical problems and identify, enter and modify data and formulae appropriately.
6D5	Collect and represent data using infographics.	Represent data in infographics such as Word Clouds and understand the benefits of representing data in a pictorial fashion.
To deepen understanding: Solve a problem by planning and carrying out data collection, by organising and analysing data using a suitable data-handling package, and by drawing conclusions and presenting findings to a specific audience. Collect data from a range of sources and use a spreadsheet to process the data through sorting and calculations.		

Strand 3: Media

YEAR 1 (Media)

KS1 National Curriculum Links: Use technology purposefully to create, organise, store, manipulate and retrieve digital content. Recognise common uses of information technology beyond school.

	Outcomes	Description
1M1	Communicate simple ideas through the use of text, images and sounds.	Create original work using predefined templates or blank documents by adding text and a given image to their work. Record sounds into their work. Develop keyboard familiarity and effective typing skills, control a mouse/touch screen to edit text appropriately and save/load their work.
1M2	Understand sound and music can be created using a range of simple technology.	Discuss where they access their music and how it can be made. Demonstrate a range of technologies that can be used to create sound/music and allow the children to explore them. Talk about and share their music making.
1M3	Record sound using simple technologies and play back the recordings.	Record voices, sounds or simple music using physical instruments/objects and with technology. Playback the recording and discuss it. Introduce the children to a simple music composition application and model how to create simple musical phrases. Allow the children to create their own musical compositions and share/discuss them with others.
1M4	Create an image/animation in a simple graphics application.	Explore the basic tools of a simple graphics application to see what affect they have. Practice and become competent using basic tools in a graphics application. Combine the use of basic tools in a graphics application effectively to create an appropriate image. Explain how they created their images using a combination of the tools. Explore how images can be altered and combined to create simple animated sequences using technology.
1M5	Capture images using a range of technologies and share with others.	Capture still images/videos whilst being aware of the health and safety issues of shooting into the sun or bright light sources. Talk about their images/videos and why some are better than others and take improved images using this feedback.
To deepen understanding: Record their own sounds and music on a computer using suitable software and microphone. Begin to word process short narrative and non-narrative texts. Develop basic editing skills including different presentational features (font size, colour and style).		

YEAR 2 (Media)

KS1 National Curriculum Links: Use technology purposefully to create, organise, store, manipulate and retrieve digital content. Recognise common uses of information technology beyond school.

	Outcomes	Description
2M1	Make simple changes to improve the look and clarity of their work.	Further develop keyboard skills for speed and accuracy of typing and be able to change basic formatting such as font, text size and colour. Begin to reflect on their work and discuss/apply changes to improve their work. Save and retrieve work independently.
2M2	Organise and communicate ideas for a specific purpose using appropriate layout and media.	Capture a range of images and discuss the quality of their image including simple framing and blurring. Make decisions about deleting images and reshooting them to improve them. Explore the more complex tools of a variety of graphics application to see wh
2M3	Record, locate and review sounds and add them to their digital creations.	Select and use devices for recording appropriate sounds including voice and singing. Create, edit and refine musical phrases for a specific purpose such as a rap, song, background music or music for a poem and talk about their creations. Locate and use any pre-recorded sounds available to them.
2M4	Add music and or a sound to affect the mood and atmosphere of their work.	Explore the effect of different music and sounds on a piece of work such as a multimedia presentation, a short film or a game. Locate and add existing sound files or music they have created to their work.
2M5	Capture and create images in different graphic applications.	Capture a range of images and discuss the quality of their image including simple framing and blurring. Make decisions about deleting images and reshooting them to improve them. Explore the more complex tools of a variety of graphics application to see what affect they have for example enhance photographs and pictures through cropping, re-colouring and resizing. Become competent using these tools in graphics applications effectively to create appropriate images. Explain how they created their images using tools in a specific package.
2M6	Understand and create simple animations.	Explore and create simple onscreen animations using a sequence of images.
To deepen understanding: Begin to make use of additional features such as a spellchecker and using additional editing tools to improve their digital creations. Recognise the intended audience for their work and begin to suggest appropriate improvements. Children begin to combine narration and background music/sound effects.		

YEAR 3 (Media)

KS2 National Curriculum Links: 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.

	Outcomes	Description
3M1	Combine and refine text, sound and graphics to communicate information for a given audience.	Continue to develop keyboard skills to add and edit text with speed and accuracy. Combine text, audio and graphics from the school network, Internet or other sources purposefully. Use design features such as text boxes, columns, etc. and appropriate proofing tools to ensure their work is clear and error free such as spell checker and thesaurus. Cut, copy and paste in order to refine and reorder content within applications.
3M2	Recognise the key features of different types of information/genres and use appropriate layouts.	Evaluate a range of printed and digital texts and discuss the key features, similarities and conventions of these texts. Create their own multimedia work showing a basic understanding of these conventions. Discuss the advantages and disadvantages of digital and printed media.
3M3	Understand how audio can enhance multimedia projects including radio and films by creating/choosing appropriate audio to fit a given context.	Explore further the effect of different music and sounds on a piece of work such as a multimedia presentation, a short film or a game. Become increasingly competent with applications that allow easy manipulation of existing sounds and creation of new sounds and music including recording their voice. Choose and create appropriate audio files for their own work and comment on their use and effect.
3M4	Capture, create and enhance new and existing digital images to communicate ideas.	Retrieve images from cameras and other sources and use a variety of graphic manipulation applications to change and alter images (such as filters).
3M5	Plan and create a simple animation.	Create a short animated sequence to communicate a specific idea making use of a simple storyboard.
3M6	Understand that evaluation and improvement is a vital part of a design process and technology allows changes to be made quickly and efficiently.	Discuss the need to reflect on their work with others and use selected criteria to evaluate the success of their work for a specific audience. Be able to make appropriate changes quickly and effectively and understand that this is much easier to achieve using technology than physical media.
To deepen understanding: Begin to link to other resources such as other documents, websites, etc. Locate and use copyright free sound files from the school network and/or internet sources. Begin to take pictures thinking about the content being captured such as portrait or landscape, long shot or close up.		

YEAR 4 (Media)

KS2 National Curriculum Links: 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.

	Outcomes	Description
4M1	Capture appropriate, quality still and moving images.	Introduce keyboard shortcuts such as cut/copy/paste. Capture digital images thinking about the purpose of the image taking into consideration lighting and framing.
4M2	Develop an understanding of differing film shots and their effective use.	Understand what a long shot, a medium shot and a close up are and why they are used. Create a short film that includes at least two shot types.
4M3	Create a 2D plan view using basic shapes.	Explore the creation and manipulation of 2D shapes including rotate and resize.
4M4	Plan, create and edit an animation, film or slideshow.	Create appropriately detailed storyboards for films, slideshows and animations. Record a short stop-motion animation reviewing and editing to correct mistakes. Add credits and titles to an animation/film/slideshow appropriately.
4M5	Compose, combine and refine music or sounds.	Select and import copyright free existing sound files into an audio production. Use layers to combine a variety of sounds including spoken word and edit them into one piece of audio appropriate to task. Use music applications and sound library to create single or multi-track music.
4M6	Identify features of good digital creation design.	Evaluate a range of multimedia appropriate to task and recognise key features of layout and design.
4M7	Collect, create and insert appropriate (fit for purpose) graphics and sound files to create a multimedia presentation.	Combine text, sound and graphics appropriately and consistently to communicate meaning for a given audience.
To deepen understanding: Begin to choose the appropriate application to edit specific media and apply particular effects. Use technology to combine and layer sound stories or backing tracks to poems/voice.		

YEAR 5 (Media)

KS2 National Curriculum Links: 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.

	Outcomes	Description
5M1	Create and amend a range of 2D graphic representations using appropriate applications.	Use 2D shape tools in an application to develop a scaled plan view of a given space (such as a playground) using the grouping tool to create composite shapes. Amend, enhance and resize images for export to other applications or websites and be aware of appropriate file types and sizes.
5M2	Create simple 3D graphics using a CAD application.	View real world examples of 3D design, create and manipulate simple 3D shapes to make simple models.
5M3	Plan, create and edit an animation, film, slideshow or presentation, then reflect on its efficacy.	Plan, create then evaluate a short animation, film, slideshow or presentation adding titles, credits and audio. Learn what approaching and retreating shots are and create examples. Evaluate their digital creation considering different shot types, sound and suitable titles and transitions. Choose appropriate presentation technique i.e. delivery in person vs standalone presentation. Locate appropriate copyright free image files independently from a variety of locations.
5M4	Source, edit and refine music and sound for a given audience or project.	Locate copyright free sound files from varied locations. Listen to audio productions, identifying sound elements, discuss their audience. Import/edit existing sounds using computer applications e.g. normalise sound & explore pitch, tempo, volume. Use multi-track application to layer sound, adding voice/music/sound effects appropriately. Begin awareness of sound file formats e.g. MP3 files are smaller than WAVs and may be more suited to import into a multimedia presentation.
5M5	Develop criteria for evaluating theirs and others work.	Develop and use criteria to evaluate the design and layout of digital content which may include presentations, apps, web sites and printable media such as posters. Consistently use the same styles of font, colour, size for headings, body text etc. throughout a document or a set of web pages.
To deepen understanding: Begin to choose suitable software and hardware to capture/create and edit images to solve a particular task. Share their work with a wider audience by publishing their work online.		

YEAR 6 (Media)

KS2 National Curriculum Links: 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.

	Outcomes	Description
6M1	Independently combine various forms of media purposefully as part of a project.	Use appropriate technical language when storyboarding a film, such as panning, approaching, retreating, close up, medium and long shots. Create a short film using various media types (still images, sound, video, animation, green screening) linked to a writing genre. Use extra equipment such as tripods, green screens or autocues to ensure a more professional production. Acquire suitable image and sounds from appropriate sources taking into consideration copyright issues and acknowledge sources where necessary. Create and manipulate images using a range of techniques to develop a particular style or genre. Design and deliver a presentation before an audience. Create a non-linear presentation such as a quiz.
6M2	Use a CAD application (3D design tool) to create a representation of an object.	Use a CAD application to create a scaled, 3D representation by adding, rotating, resizing and grouping 3D shapes.
6M3	Edit and manipulate multi-track music and sound and refine for a given audience or project.	Listen to and evaluate professional broadcasts and comment upon how their elements are designed with a target audience in mind. Independently choose and use appropriate devices to record sounds and save in an appropriate format. Create a multi-layered, audio composition including music, spoken voice/singing and sound effects. Ensure audio com[positions adhere to copyright laws.
6M4	Evaluate and adapt individual features to enhance the overall presentation.	Continue to develop and use criteria to evaluate the design and layout of digital content which may include presentations, apps, websites and printable media such as posters. In light of comments made by peers and audience amend and improve work.
To deepen understanding: Publish their content online ensuring they have adhered to all copyright rules. Publish digital creations online. Embed a presentation in the school's blog/website.		

Strand 4: (e)Safeguarding

YEAR 1 ((e)Safeguarding)

KS1 National Curriculum Links: 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.

	Outcomes	Description
1 E1	Identify trusted adults and ensure a trusted adult knows what they are doing online and inform them if online content makes them feel sad, scared or confused.	Be able to identify safe behaviours in their day to day world such as not talking to or meeting strangers and how this applies in the online world. Understand what constitutes a trusted adult and identify the trusted adults in their lives and how they help to make sure they are safe and secure Discuss the activities they do online, the content they have come across and how they shared this with their trusted adult. Understand that they should only go online or play games that are approved by trusted adults and that if they come across something upsetting to tell a trusted adult immediately. What systems exist in the home to ensure trusted adults know what their children are doing?
1 E2	Behave in a kind and considerate way to others in the real and virtual world.	Discuss how they behave towards and with others in school and at home and discuss the benefits of positive behaviour. Understand these positive behaviours should be applied with regard to virtual world interactions. Identify the activities, content and games they are accessing in school / home and demonstrate or talk about how they would do so safely and politely.
1 E3	Understand that the internet is fun but just like there are rules in the real world to keep you safe there are rules for keeping them safe in the online world.	Identify and discuss some of the basic rules that keep them safe in the real world and why they are important. Discuss and share some basic rules for ensuring they stay safe online.
To deepen understanding: Look at the focus of Safer Internet Day for the year.		

YEAR 2 ((e)Safeguarding)

KS1 National Curriculum Links: 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.

	Outcomes	Description
2 E1	Identify trusted adults and ensure a trusted adult knows what they are doing online and inform them if online content makes them feel sad, scared or confused.	Be able to identify safe behaviours in their day to day world such as not talking to or meeting strangers and how this applies in the online world. Understand what constitutes a trusted adult and identify the trusted adults in their lives and how they help to make sure they are safe and secure Discuss the activities they do online, the content they have come across and how they shared this with their trusted adult. Understand that they should only go online or play games that are approved by trusted adults and that if they come across something upsetting to tell a trusted adult immediately. What systems exist in the home to ensure trusted adults know what their children are doing?
2 E2	Know login details and passwords should only be shared with trusted adults.	Discuss what a login is and why they often have a password. Why is it important to use logins and passwords? Discuss the need to protect the content they are creating or accessing from others and that to do this they need a secure password that can only be shared with a trusted adult. What might happen if somebody else has their login details?
2 E3	Understand that they can be connected to many people in their life (real life and online).	Understand that when they are playing games or online the characters they are interacting with could be computer generated characters or real people in other parts of the world and they should be able to identify if they are real or fictitious. Play some online games and ask the children to identify if the characters are real people or computer generated, can they always tell?
2 E4	Be polite and respectful when communicating & playing games online.	Identify appropriate online communication that is polite and respectful. Understand that just because they cannot see the person they are communicating with it doesn't mean that they should communicate differently. The person will still be hurt or upset by things you say or do online that are unpleasant.
2 E5	Talk to a trusted adult before sharing information about themselves online.	Begin to understand the idea of personal information and that this includes their full name, address, school name, phone number and date of birth and why using a nickname is a safer way to interact online. Know to talk to a trusted adult before submitting or sharing their full name, address, school name, phone number and date of birth online. Ensure a trusted adult is aware of who they are interacting with online and has approved the interactions because some people online may not be who they say they are.
2 E6	Know that some of the people they interact with online may not be who they say they are.	Talk to the children about what they do online and who they communicate with, do they know them in the real world? How can you be sure the people online are who they say they are or appear to be? Reinforce the fact that children should have the approval of a trusted adult before interacting or communication with others online and to tell a trusted adult if others are communicating / interacting with them in an unpleasant manner.
To deepen understanding: Look at the focus of Safer Internet Day for the year.		

YEAR 3 ((e)Safeguarding)

KS2 National Curriculum Links: Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

	Outcomes	Description
3E1	Identify the dangers of clicking links they receive when using technology.	Understand what a hyperlink is and what they look like. Why do we send them and what are they used for? Know to get a trusted adult's approval before clicking links, pop ups and attachments that they may come across online and in games and be aware of some of the consequences of clicking such links.
3E2	Identify personal information about themselves and others.	Be able to identify / classify personal information about themselves, their friends and others and comment on the types of information they can find about people in the newspapers and online.
3E3	Explain the possible consequences of sharing personal information online.	Be able to identify a range of personal information and justify who they might safely share it with in discussion with a trusted adult. Understand that sharing personal information is dependent on who they share it with. Understand that sharing personal information with people they do not know or trust (through games and other online activity) could lead to strangers trying to meet up with them or communication they find upsetting or confusing. Children should know to report such communication to a trusted adult immediately.
3E4	Know that bullying through the use of technology is called online bullying and how to report it.	Discuss examples of bullying and how to respond to it in the real world. Identify some acceptable and unacceptable ways to communicate / interact with others in the real world. Discuss the various technologies they use to communicate / interact with each other and how they can be used to communicate in a positive manner. Understand the term online bullying and be able to explain what to do if they or a friend is bullied online.
3E5	Understand that not all information you access online is accurate or reliable.	Know not to believe or accept everything they see online as correct or truthful and know to check this with a second site or only use sites recommended by trusted adults. What examples of inaccurate material can they find and how do they know it is inaccurate?
To deepen understanding: Look at the focus of Safer Internet Day for the year.		

YEAR 4 ((e)Safeguarding)

KS2 National Curriculum Links: Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

	Outcomes	Description
4E1	Identify age limits and PEGI ratings for games and understand the importance of only accessing age appropriate content.	Understand the PEGI system and be able to describe the icons for the ratings. Be able to classify some of the games they play and explain why they are or are not appropriate for a given age group. Discuss the importance of talking to their parents about their games so that they can help them choose appropriate games to play.
4E2	Explain the possible consequences of submitting personal information online.	Understand that websites ask for personal information to set up accounts and why this is often age restricted to 13. Know not to enter personal information online without adult help and question why sites need their information and what they will do with it. Possibly look at some simple T&Cs to raise awareness that documentation is available to explain how data is used (and that parents need to do this). Describe reasons information might be shared and problems it might cause.
4E3	Ensure information submitted online is only accessed by the people they trust.	What information have you submitted or shared online, this includes information shared through games, any social media (could be a school blog), texts, email etc. Who can see this information? Share and discuss ways that this information is only accessed by the people you want to access it? Can you guarantee this?
4E4	Identify the similarities and differences of virtual and real world communication to develop an understanding of positive online communication.	Identify the similarities and differences between written and verbal communication and understand that sometimes these can be misinterpreted. Understand the concept of 'Netiquette' and how other online users can make positive and negative judgements about a person based solely on our online interactions. Describe and share ways our online interactions can ensure that we create a positive online persona.
4E5	Use strong passwords for all online accounts and devices.	Understand what constitutes a strong password and discuss strategies for creating strong personal passwords that are easy to remember. Describe the reasons to set passcodes / passwords for all devices and the implications of leaving these devices unlocked when not in use.
To deepen understanding: Look at the focus of Safer Internet Day for the year.		

YEAR 5 ((e)Safeguarding)

KS2 National Curriculum Links: Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

	Outcomes	Description
5E1	Understand the terms plagiarism and copyright and be aware of the implications of copying and sharing content without permission.	Know what plagiarism / copyright are and understand people often plagiarise without thinking by cutting and pasting. Understand the legal and moral reasons not to plagiarise or infringe copyright, the impact it can have on the creator of the content and know legal download sites for video and music. Understand how to simply reference others people's work you have permission to use and know how to search for copyright free content.
5E2	Use blocking / unsubscribing / reporting mechanisms appropriately.	Children should know how to report or block users within games, apps and websites they access where online content / interactions are unsolicited or make you feel sad, scared, threatened or confused. Children should know how they can unsubscribe and block emails they do not wish to receive. They should know how to make reports to external agencies including CEOP and ChildLine in conjunction with a trusted adult.
5E3	Control who they interact with online and the information they share.	Discuss that information shared online can be stored and shared with others and is almost impossible to remove. Children should be able to differentiate between online only 'friends' and real world friends. Children should know not to share personal info. with people they do not know in real world and be aware that when sharing with trusted people it could still be shared wider than planned/anticipated. Know how to configure security settings including accepting and blocking 'friends'. Ensure their parents are aware of all the online friends they are interacting with.
5E4	Know that bullying through the use of technology is called online bullying and how to report it.	Discuss examples of bullying and how to respond to it in the real world. Identify some acceptable and unacceptable ways to communicate / interact with others in the real world. Discuss the various technologies they use to communicate / interact with each other and how they can be used to communicate in a positive manner. Understand the term online bullying and be able to explain what to do if they or a friend is bullied online.
To deepen understanding: Look at the focus of Safer Internet Day for the year.		

YEAR 6 ((e)Safeguarding)

KS2 National Curriculum Links: Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

	Outcomes	Description
6E1	Explain the importance of a balanced lifestyle with respect to technology use.	Understand the concept of a balanced lifestyle and be aware of the amount of time they are spending in front of a screen and the impact this may have on their physical and mental health. Describe non-screen activities they can engage in to ensure they have a balanced lifestyle. Understand what addiction is and where to go for help to deal with addiction to technologies and content.
6E2	Explain the importance of a positive 'digital footprint'.	Understand that any information about them shared online (by themselves or others) could be accessed by anybody in years to come; that this 'trail' of digital information creates a 'digital footprint'. Identify the different sources/types of information that might already be online about them and what control they have over this information. Describe positive/negative implications of anybody accessing their 'digital footprint' now and in the future. Describe what steps they can take to create a 'positive online image' including defining acceptable and unacceptable online behaviour and benefits this will have now and in the future.
6E3	Appropriately configure and secure all devices used to access personal data.	Understand that to remain safe and secure online you need to ensure the devices you use to connect online are suitably secure and that you are using a secure connection including games consoles, tablets and mobile phones. Ensure you have approval from a trusted adult before using a webcam. Understand the terms including antivirus, firewall, security updates, pop up blocker, etc. Create and regularly update strong passwords and do not use the same password for all accounts and devices.
6E4	Evaluate whether games, websites and social media are appropriate for specific ages.	Use PEGI ratings and other criteria to identify the (e)Safeguarding issues with regard to a range of games and online content to make informed judgements on the suitability of the content for a given age range. Talk to parents about the online games they are playing so that joint decisions can be made with regard to accessing appropriate online content and games.
To deepen understanding: Look at the focus of Safer Internet Day for the year.		

Strand 5: Information Literacy

YEAR 1 (Information Literacy)

KS1 National Curriculum Links: Use technology purposefully to create, organise, store, manipulate and retrieve digital content. 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. Recognise common uses of information technology beyond school.

	Outcomes	Description
1L1	Access information comes from a variety of different sources and understand technology allows quick access to these resources.	Talk about and name technologies for finding information within and beyond school and explain their use. Talk about how this technology can give access quickly to a wide variety of resources and information.
1L2	Explore a variety of digital information as part of a given topic.	Access different types of information from different sources e.g. using books, apps, websites, TV, DVD etc.
1L3	Find / access information using technology.	Use a mouse/touchscreen/tablet to follow the appropriate buttons to navigate to websites or find network resources. Begin to understand that digital devices use icons, menus and links to navigate to information.
To deepen understanding: Begin to explore how text can be entered from the keyboard into a suitable search engine i.e. Primary Safe Search to find specific given websites such as CBeebies.		

YEAR 2 (Information Literacy)

KS1 National Curriculum Links: Use technology purposefully to create, organise, store, manipulate and retrieve digital content. 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. Recognise common uses of information technology beyond school.

	Outcomes	Description
2L1	Identify information through a range of appropriate forms of media.	Recognise information in its different forms (pictures, text, sounds and video) and use it to answer questions and understand that not all information found is useful.
2L2	Recognise the layout of a web page and interact with it appropriately.	Navigate within a website using links and menus to locate information and understand that websites have a specific address e.g. www.bbc.co.uk.
2L3	Search for information using child friendly search engines.	Enter text into a child friendly search engine to find specific given web sites understanding that the internet contains a large amount of information. Develop questions about a specific topic and use information to answer those questions.
To deepen understanding: Begin to do independent searches using appropriate child friendly search engines and discuss the suitability of the website found.		

YEAR 3 (Information Literacy)

KS2 National Curriculum Links: Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.

	Outcomes	Description
3L1	Use search technologies effectively by identifying specific keywords.	Understand that technology enables access to a wide range of information and converting questions into keywords helps to search for specific information using search engines / technologies. Understand that some pieces of information found through searching are more relevant than others.
3L2	Find and choose appropriate information and use it in other digital forms.	Use the information located purposefully to complete specific tasks e.g. copy, paste and edit relevant information.
3L3	Locate specific information online and recognise that web pages can be organised in different ways.	Find information on a given topic and understand that information may be linked by different media e.g. graphics, links and text.
To deepen understanding: Ask questions and develop keywords to enter in their own searches. Navigate to an appropriate website to answer questions on a specific topic.		

YEAR 4 (Information Literacy)

KS2 National Curriculum Links: Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.

	Outcomes	Description
4L1	Carry out and modify searches developing keywords to improve search accuracy.	Use keywords and enter them into a chosen search engine and access relevant information quickly and modify the keywords in a search if the results are not useful. Understand the summary information for a site on a page of search results and its ranking according to relevance to their enquiry.
4L2	Check the relevancy and accuracy of search results.	Understand websites are not always accurate and that information should be checked before it is used. Be able to skim read and sift information quickly to understand if the search result is relevant.
4L3	Locate online content using some of the available advanced features in search engines.	To be able to discuss the different search engines and their features and know that they can use search engine tools for different types of media e.g. CC Search, Google Image Search, video and sound but understand that the results are not always what you expect. Evaluate and compare some of these tools.
To deepen understanding: Select, compare and combine information from a range of different sources.		

YEAR 5 (Information Literacy)

KS2 National Curriculum Links: Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.

	Outcomes	Description
5L1	Interpret and validate information from a range of online sources.	Select appropriate search engines to find information related to their topic and use a range of keywords to find different sources of information. Compare sources of information for content accuracy and discuss the impact of using inaccurate or incorrect data found online.
5L2	Recognise that the Internet may contain material that is irrelevant, bias, implausible and inappropriate.	Be aware that anybody can publish information online and identify examples such as blogs, Wikipedia, YouTube, etc. Identify simple steps to help ensure information is accurate and reliable such as using multiple sources and identifying reliable sources such as the BBC, National Museums, etc.
5L3	Search for and save differing types of media using search engine functions.	Discuss different strategies for finding relevant information e.g. using different keywords or filtering for copyright free images and be aware of the dangers of downloading content from the web.
5L4	Use more advanced features of search engines.	Use search engines for other functions, such as a calculator, conversion tool, distance and mapping, translations and show an awareness of the (e)Safeguarding features.
To deepen understanding: Begin to question the validity and plausibility of information found based on author and organisation.		

YEAR 6 (Information Literacy)

KS2 National Curriculum Links: Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.

	Outcomes	Description
6L1	Check plausibility of information from a variety of chosen sources on the same topic.	Talk about validity and plausibility of information by checking other sources and recognise the impact of using incorrect information in their work.
6L2	Make informed judgments as to the validity of information on a website and be aware of bias.	Skim & select information checking for bias and different viewpoints. Talk about where web content might originate from by looking at web address, author, other linked pages and understand some websites can be trusted more than others when questioning accuracy\authenticity of the info published. Develop a range of criteria for assessing a website (navigation/value of information/trustworthiness/objectivity). Use criteria to rate sites and compare findings with peers.
6L3	Understand how search engines work and rank results.	To understand the dynamics of different search engines and how results are ranked.
To deepen understanding: Get involved with creating/organising/moderating digital content on a school blog/website Provide digital content for the teacher to upload to a reputed online knowledgebase such as Simple English Wikipedia.		