**Computing Overview**

**General:**

1. This document should be printed by each teacher and referred to and updated when planning and assessing.
2. This scheme of work does not tell you how to teach a unit, this is at the discretion of the teacher. However, reference should be made to the progression of skills listed in this document. These skills could be highlighted and dated when completed.

1. At the start of each year time must be given to discuss internet safety and to ensure that parents and pupils reflect on and then sign the schools use of the internet document.
2. Teachers must make full use of the computers by providing continual opportunities for children to access material relevant to the current topic. Teachers should also be aware that valuable resources could be independently accessed by the children via Purplemash, Espresso and Active Learn. The curriculum letter sent each half term should give details of home learning opportunities through computing.

# The areas of the curriculum

The new Computing curriculum is divided into 3 areas, digital literacy, Information technology and Computer Science.

**Digital Literacy:** Internet Safety will be taught at the beginning of each academic year using the CEOP resources. Where possible, parents will be involved with this learning. We will also encourage the children to be critically aware of information they find online and how to think about whether to accept it.

**Computer Science:** The core of computing is computer science, in which pupils are taught the principles of information and computation, and how digital systems work.

**Information Technology:** The following areas are covered:

* General skills**: Using a laptop, keyboard skills**
* Finding Things Out: **Digital Research**
* Finding Things Out: **Data Handling**
* Developing Ideas and Making Things Happen: **Modeling**
* Developing Ideas and Making Things Happen: **Data Logging**
* Exchanging and sharing information: **Text and graphics**
* Exchanging and sharing information: **Learning Platform**
* Exchanging and sharing information: **Multimedia / digital imaging**

**Objectives from the New National Curriculum DL = digital literacy CS= computer science IT – Information Technology**

## Key Stage 1

Pupils should be taught to:

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

**Key Stage 2**

Pupils should be taught to:

* design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
* use sequence, selection, and repetition in programs; work with variables and various forms of input and output
* use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
* understand computer networks including the internet; how they can provide multiple services, such as the world-wide web; and the opportunities they offer for communication and collaboration
* use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
* use technology safely, respectfully and responsibly; know a range of ways to report concerns and inappropriate behaviour
* select, use and combine a variety of software (including internet services) on a range of digital devices to accomplish given goals, including collecting, analysing, evaluating and presenting data and information.

**Finding Things Out Digital Research:** finding information using digital resources

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **Key Ideas** | * That information is available from a variety of sources both digital & traditional * That information can be presented in a variety of forms e.g. sound, text, picture, video * That the screen pointer will change when it is over a link or button e.g. into a hand * That you can follow a hyperlink to another location e.g. webpage * That keywords can be used to search for information | * That information can be found on CD-ROMS, websites & other digital media * That the internet is a network of connected computers across the world * That a web browser lets us look at web pages with tools to navigate e.g. back button * That a web browser allows us to store bookmarks for favourite pages * That the internet contains a lot of information created by a range of people (like a huge library) & might contain mistakes | * That the internet is a network of connected computers & the world wide web is a vast collection of websites that are stored on these computers * That websites have Unique Resource Locators (URLs) or addresses * That keywords can be used to search for information but results may not always be useful * That favourites & links can be organised into folders * That some websites are better than others for finding specific information, as the internet is unregulated * That images on the internet have been put there by others & should not be used without credit | * That the parts of a web address (URL) can give useful information e.g.   .gov   * That a web browser keeps a history of pages visited * That search engines use tools that catalogue website content to create a searchable database * That searching the whole internet using Google can be time consuming & difficult * That search results should be skimmed to save time * That some results from a search engine query have been paid for by the website owners (sponsored links) * That information from the internet should not be cut & pasted into original work without   giving a reference | * That a web browser displays text, images & multimedia elements according to instructions in a html document & this is seen as a webpage * The digital information sources have different layouts to print media (e.g. scrolling pages, pop up boxes) * That files & documents can be downloaded from a website but could be unsafe * That information should be skimmed, sifted, selected & checked for bias in accuracy & misinformation * That there are complex copyright & ownership issues around online content such as pictures, music etc. | * That searches using a combination of key words will be more effective for finding specific information * That websites are designed for different audiences & may use a range of layouts, built in tools & technologies depending on their purpose * That the internet can be used to upload as well as download data & create communities & connections * That websites contain adverts & pop-ups that are designed to encourage clicking & may be unsafe |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **Skills & Techniques** | * Open an internet browser   & use favourites to load a website   * Insert a CD-ROM & use the navigation screens & menus * Play online sounds & videos using onscreen buttons e.g. play, rewind * Click on hyperlinks & use the back button * Use obvious keywords to search for simple information or pictures | * Explore a CD-ROM &   show that the information is stored on the disc, not the computer   * Find out where the internet connections are in class & how the computers are connected with cables * Explore pre-scheduled digital information sources purposefully, using simple navigation tools including hyperlinks, menus index, forward & back buttons etc. * Save a website into the favourites folder * Discuss who makes a website & compare to a book author & illustrator | * Draw a representation of   the internet to show a basic understanding of the connections & links   * Type a simple URL into the address bar of a browser to locate a web page * Search an online library   e.g. Living Library for images & text on a specific topic using keywords   * Use the favourites folder to save a link in a new folder * Write a review of a website, evaluating its usefulness * Copy & paste an image from a website & add a credit for the website | * Analyse search engine   result lists by skimming & scanning & looking at the web address for clues   * Look back at the history in a browser to find a previously visited website * Create a report or presentation that answers specific questions on a topic using keyword searches (either within a digital content library like Espresso, or in a child-friendly reference area like Yahoo Kids or the BBC) * Make a list of websites used in research, with the URL, the name of the website & if possible, the author | * Look at the HTML code   behind a website & identify some of the code elements   * Use a Webquest or similar online treasure hunt to explore a collection of websites & produce an agreed outcome * Download files from the Webquest site & save & open * Compare digital information sources (e.g. website) to print source (e.g. newspaper) & discuss reasons for differences * Explore a fake website & identify some of the ways to check author, accuracy etc * Discuss copyright issues | * Search an online   database for specific information e.g. world river data   * Transfer that information into appropriate data handling package e.g. spreadsheets for analysis * Use a selection of websites to research a topic & create a presentation for a specific audience * Use a moderated online forum or website to ask a question, find out information or submit information or opinion * Identify various aspects of a webpage, including adverts, commercial toolbars, offsite links   etc. |

**Finding Things Out Digital Research:** finding information using digital resources

**Finding Things Out Data Handling:** collecting, organising, analysing & evaluating data

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **Key Ideas** | * That ICT can be used to create pictograms more quickly & easily than traditional methods * The data represented graphically can be easier to understand than tables or text * That simple mistakes can easily be made when recording information both using ICT & other methods | * That ICT can be used to create graphs from data * That information represented as graphs but that these can only provide limited answers to some questions * The ‘yes/no’ questions can be used to divide a set of objects into sub-sets & that a sequence of questions can identify an object * That ICT can create a branching database * That digital information may be inaccurate, biased or unsafe | * That databases exist in a variety of forms including paper based & ICT * That a database provides a means of storing information & can be searched * That a database can only answer questions if appropriate data is entered * That information can be held as numbers, choices (e.g. Yes/No) or words * That sometimes charts are a good way to answer questions & sometimes searching data or looking at tables is more useful * That inaccurate data is sometimes more easily noticed in graphical   representations of data | * That the initial questions should determine the type of data collected & the structure of the database * That the database is created by collecting and inputting data into a prepared structured * That pie charts are useful for answering some questions while line graphs are more appropriate for others * That tables or graphs can show more one variable allowing one to look at relationships and trends more clearly * That errors can occur during data collection and entry and input will need   to be checked | * That a database can be searched using combination queries with AND/OR > < etc. * That choices as to whether to use locked or alphanumeric fields, pictures etc. effect how a database may be used * That information held in databases may contain errors & that this can effect results | * That a spreadsheet can be used to organise, sort & analyse data & produce graphs & reports * That data held in a spreadsheet can be sorted or filtered using software tools * That data & statistics can be used ambiguously to favour a desired point of view |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **Skills & Techniques** | * Use ICT to create   pictograms & use them to answer simple questions   * Open an existing data file & change the data * Create a new data file & add simple data e.g. birthday month * Choose graph or table view from the menu * Print out a graph or table * Identify obvious errors in recorded information e.g. typos, data entry mistakes, spelling mistakes etc. | * Complete a table e.g. a   simple spreadsheet & then create a graph to answer a question   * Search a prepared branching database * Create a simple branching database using a collection of objects * Use a database to produce bar charts * Amend information in a data file to correct errors | * Explore a range of paper-   based databases & compare to ICT versions   * Open a prepared database & identify the main features: records, types of fields etc. * Use the search tool on a simple database to find out the answer to questions * Answer simple questions by matching the contents of a single field * Select record view & report view appropriately to find information * Answer simple questions by ordering records by a key field & then taking the top or bottom record * Check for anomalies using   graphical representations | * Explore appropriate   questions that can be answered by collecting specific data   * Create a simple database with different types of fields & records * Collect data to answer a simple question using surveys, tally sheets, research etc. * Use a variety of graphs to display the information including piecharts & discuss which type of graph works best for different kinds of data * Work with a partner to check data input for errors | * Choose when to search   when to sort & when to use a graph to answer questions   * Collect appropriate data from various sources to investigate questions & theories * Create tables & graphs with more than one variable * Create a database using complex setup tools (e.g. keywords) to answer specific questions * Check for accuracy by checking data against predicted or expected outcomes | * Copy cells & formulae   using copy & paste & fill across & down   * Use a spreadsheet to draw a graph appropriate to answering a given question * Filter data in a spreadsheet using Autofilter * Use ICT to create pie charts & line graphs appropriate * Look at information from different viewpoints & validate resources |

**Finding Things Out Data Handling:** collecting, organising, analysing & evaluating data

**Finding Things Out Modelling:** simulations, models, graphical modelling & painting

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **Key Ideas** | * That a computer can be used to simulate a wide range of environments & situations * Understand that some simulations are more elaborate than others * That a computer simulation allows you to make choices * That a painting package can be used to create, edit & print pictures | * That computer simulations allow users to explore options & make choices * That computer simulations are simplified representations of more complex situations * That different techniques can be used to communicate ideas through pictures e.g. use watercolour brush to recreate paint style * That pictures & scenarios created on the computer can be edited, copied & printed easily * That digital photos can be altered using simple painting tools & stamps | * That computer simulations allow users to solve problems & test ideas * That there are rules ‘behind the scenes’ that determine how things work in a model/game/simulation * That graphics software can be used to automate & repeat some tasks * That the zoom tools can be used to work in close up * That there are differences between bitmap & vector graphics that will affect their suitability for a given task * That areas of a picture can be selected, copied,   cut & pasted | * That computer simulations allow one to explore controlling aspects of a real life situation but there are limitations * That graphics software can be used to create a variety of effects e.g. using filters * That transformation tools in graphics software can be used to cut out sections of a picture & paste it into another to create a collage * That a graphical model can be used to explore alternatives & patterns   e.g. classroom layout | * That spreadsheets can be used to create a simple model to calculate costs & are useful when numbers change * Spreadsheets may manipulate variables ‘behind the scenes’ * That graphics software can be used to enhance & manipulate pictures e.g. to fake a photographs * That pictures can be assembled from many different elements &changes can be made to any or all of these elements | * That spreadsheets can use a simple rule to create a tool to calculate things like currency conversions * That spreadsheet models allow exploration of possible outcomes & what-if scenarios * That graphics software allows layers to be created within an image & that this allows complex images to be created & manipulated |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **Skills & Techniques** | * Use a mouse to move &   place (drag & drop) items accurately on a screen   * Create a simple representation of a real or a fantasy simulation using painting or modelling software * Use simple tools in a painting package * With support use print preview where appropriate & print out their paintings * Add stamps/motifs or clip art to a scene | * Explore the effect of   changing the variables in simulations & use them to make & test predictions   * Select purposefully & use a variety of tools in a painting package e.g. the straight line, geometric shapes & flood fill tools * Use stamps & clipart purposefully * To open a digital image from file & add painting effects using brushes & stamps | * Explore the effect of   changing the variables in simulations & use them to make & test predictions   * Explain some of the simple rules that control how the simulation behaves when choices are made * Use the tile/repeating pattern tools in painting software to create a pattern * Zoom in & out of a picture to do detailed work * Create & edit vector graphics e.g. using the drawing tools in *Word* * Use the selection tools to explore the effect of cutting, copying & pasting   areas of an image | * Change the variables in a   simulation to achieve a given outcome   * Record the outcome of choices in a simulation systematically to help achieve an outcome * Create & edit pictures using combinations of tools & effects * Use the magic wand & other selection tools to cut & paste between pictures * Use geometric tools to create objects which can be manipulated * Move rotate & resize graphic elements e.g. shape | * Enter labels & numbers   into a spreadsheet   * Enter formulae into a spreadsheet * Change data in a spreadsheet to answer ‘what if’ questions & check predictions * Use ‘SUM’ to calculate the total of a set of numbers * Select appropriate graphics tools to fulfil a design brief e.g. create an image from an advert    | * Use a spreadsheet to   convert one value to another based on a rule   * Design & create a simple spreadsheet model using information experiments & real life situations e.g. predict shadow length at different times of the day from initial measurements * Use the layers tools in a graphics software to create a complex design with several graphical elements |

**Finding Things Out Modelling:** simulations, models, graphical modelling & painting

**Data Logging:** monitoring the world around us

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **Key Ideas** | * that we use our senses to find out what is happening around us & that some machines can do the same | * that a computer can be used to measure external conditions like sound levels & temperature * that simple sensors can control everyday devices like automatic doors, car park barriers, street lights etc. | * that a device attached to a computer can take readings of conditions : light intensity, temperature & sound levels etc. | * that different sensors can measure different conditions * that there are advantages to using computes to monitor & log data e.g. they can take accurate & reliable readings in dangerous   conditions | * that a sensor can monitor external conditions & trigger appropriate responses * that data logging software can be set up to log data in many different ways | * That programmes can control devices to respond differently to different inputs |
| **Skills & Techniques** | * Identify a range of environmental factors such as light & dark, hot & cold, loud & quiet & know which senses we use to detect differences in these factors | * View on screen measurements of sound levels & temperature as part of topic work * Begin to identify & talk about how everyday devices with sensors work | * Use a simple sensor attached to a computer to take readings as part of a science or humanities activity | * Attach an appropriate sensor to a device connected to a computer & take readings to investigate a specific question or theory * Discuss the use of data logging in the wider world with examples of use e.g. street lighting, automatic   doors, Mars rover | * Use a light/sound/temp sensor independently * Use a simple input to trigger an event e.g. sound triggers a buzzer – burglar alarm * Set a variable e.g. time intervals in the data logging software | * Develop a system that controls events in response to changing conditions |

**Text & graphics:** using word processing, presentation, DTP & email tools to communicate

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **Key Ideas** | * That text can be entered & corrected * The importance of spaces between words * The difference between running text (text wrap) & text with line breaks * That ICT can be used to rearrange text to make it easier to read * That pictures e.g. clip art can be inserted | * That ICT can be used to rearrange text to make it easier to read * That ICT can be used to change the appearance of text to achieve a particular effect * That text & graphics can be combined to present information * That images can be resized & cropped on the page * That the internet can be used to share information via email, online comments etc. | * That ICT can be used to redraft more easily than traditional methods * That a document can be viewed in a variety of ways onscreen e.g. whole page view, print preview etc. * That image & text can be arranged & grouped differently on a page using various layouts & text wrapping settings * That text & graphics & multimedia elements can be combined to communicate & present information * That email is used to send messages between individuals & groups * That email addresses have a particular form * That messages can be sent in other ways online   e.g. IM | * That there is a range of software applications each one best suited to a different communication task * That a range of tools including callouts, tables, text boxes & formatting tools can be useful in achieving that desired effect * That hyperlinks can be created to link to websites, files & documents * That presentation software can be used to communicate effectively for a given context or audience * That email can be used send & receive attachments * That email can be used to send malicious content * That mobile phones & other devices can be used   to send information | * That software offers a range of language tools including spellchecker, thesaurus, grammar guide, word count, * That images on a website are stored separately & are linked to the webpage with code that you cannot see * That presentation software can offer a range of interactive & dynamic tools & effects to engage the audience   e.g. animation transitions etc.   * That the internet can be used to participate in online communities, message boards & chat rooms * That there are safety issues involved when suing these tools | * That WP software has tools to allow editing & changes to be tracked & share collaboratively * That WYSIWYG web design software will organise web page elements & manage website folders & navigation links * That presentation software can be used with hyperlinks to create non-linear presentations * That social networking websites can be used to communicate & share digital content but that there are issues around privacy, fairness & rules for appropriate behaviour online |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **Skills & Techniques** | * Type letters, words &   simple sentences   * Select text from a word bank * Use the following keys correctly: spacebar, backspace, shift, undo * Use the return/enter key to insert line breaks * Insert clipart with support * Begin to use copy, cut & paste to reorganise text | * Place the cursor on the   screen to delete & insert text   * Format text using simple formatting e.g. bold, fonts * Begin to use spellchecker * Use shift key for punctuation & symbols * Search for pictures in a clipart gallery or resource bank using keywords * Resize & crop images as appropriate using handles * Explore websites with email links & message forms | * Copy & paste text &   pictures from a digital source e.g. web page into a document (with reference to issues of copyright)   * Change some of the elements in the page setup e.g. portrait/landscape * Insert an image from a folder & change the way the picture & text wrap using layout settings * Use presentation software e.g. PowerPoint to create a sequence of slides * Open, read & send a reply to an email * Address, write & send a new email to several people * Discuss ways in which   ICT is used to communicate | * Select & use appropriate   software to achieve a design brief e.g. brochure, poster, menu etc.   * Use a range of tools to create appropriate layout   e.g. tables, borders, wordart etc.   * Add hyperlinks to a document * Use the slide transition & simple animation tools in presentation software * Send & receive attachments & open & save them * Use address books, BCC & CC fields * Open files from online web space e.g. LG portals | * Use the spell check,   thesaurus & grammar functions when editing & modifying work   * Put hyperlinks into a document e.g. refer to a website * Create a simple webpage with some text & images using web design software * Create a presentation with dynamic elements such as buttons, transitions & animations suited to the intended audience * Send a comment or request using an online form or poll to a pre- selected website * Participate in an online poll * Make a list of rules & tips for keeping safe online    | * Use track changes to see   & respond to comments made by a teacher or peer   * Use the full range of tools in WP, DTP & presentation software to organise & present information suitable for a specific purpose * Create a simple website with basic navigation using web design software or an online tool   e.g. LGft   * Create a non-linear presentation or text using hyperlinks & story boards * Participate in a moderated online forum or community pre- selected by an adult e.g. LGfl school discussion forum, school council   forum etc. |

**Text & graphics:** using word processing, presentation, DTP & email tools to communicate

**Multimedia:** combining text, digital images & sounds

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **Key Ideas** | * That ICT can combine images, text & sounds e.g. a Talking Book, CD-ROM, 2Simple 2Create a Story * That scanners & digital cameras (including webcams) can be used to create an image that can be seen on a computer * That computers & other devices can record & store sounds * That computers can be used to create musical sounds & these might sound like real instruments | * That computer software can organise sound, pictures & text to create a multimedia presentation using sounds & effects from a library within the software or recorded using tools within the software * Know that digital image & sound files can be transferred to & from a computer or other digital storage * That music software uses icons to represent sounds & musical elements | * That images & sounds (including film & animation) can be imported into multimedia software * That multimedia can be distracting inappropriate for some audiences or purposes * That software can be used to edit & manipulate sound & image files, adding special effects etc. * That musical elements can be re-arranged, repeated & edited using ICT | * That there are different tones & registers for multimedia elements as well as text that are suitable for different audiences & purposes * That multimedia elements can take up a lot of digital storage space & files may have to be compressed & edited * That music software can be used to change musical elements such as pitch, tempo & timbre | * That the way a presentation is to be published (print, screen, webpage) should inform choices at the design stage e.g. size & number of pictures * That scanners & cameras & sound recordings have automated settings that make choices about how the image is recorded & where it is saved * That a range of input devices can be used to create music with ICT   e.g. electronic keyboards | * That the elements of a multimedia presentation can be either embedded in the presentation or linked to & this has implications for the size & transferring the presentation to other computers * That sound & images can be created & recorded in a range of common file types & that this can sometimes be changed depending on the required use of the file * That ICT can be used to create & edit complex musical pieces with   imported elements |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **Skills & Techniques** | * Explore a talking book &   discuss how it is different from a traditional book   * Create a simple multimedia page/slide/scene with support * Use a digital camera, webcam & scanner to create a digital image with help from an adult * Use sound recording software with help e.g. Sound Recorder * Compare using a tape recorder/film camera * Interact with buttons &   pictures to create musical sounds & phrases | * Use appropriate software   to combine images, text & sounds to create a simple multimedia presentation using sounds & effects from a gallery or library & recorded using tools within the software   * Take digital photographs with a camera or scanner & transfer to a computer using USB lead or media card with support * Record, save & replay sounds using Sound Recorder or an MP3 recording device * Use icons to arrange musical phases | * Insert images & sounds   created outside the multimedia software being used   * Evaluate & modify a multimedia story or presentation to it fit for purpose * Use simple image & sound editing software to re- size, crop & compress images & sound files to suit their purpose * Use music software tools to create, organise & re- organise musical elements & sounds | * Choose appropriate   resources to create a multimedia presentation for a specific purpose & audience & be able to explain choices   * Resize images to reduce their file size using simple graphics software & know how this differs from changing screen dimensions * Crop sound files using Sound Recorder or similar to remove unwanted sections * Use music software to create a piece for s specific purpose e.g.   music for a film or play | * Record planning & design   stages using diagrams & labels to support choices & subsequent modifications   * Use simple dialogue boxes & menus to set up the scanner, camera or sound recorder to create & save files with specific resolutions & save in an appropriate folder * Use a range of input devices to create music using ICT including piano style keyboards if available | * Create a presentation   with a range of multimedia elements & then save & store the presentation in a way that conserves links & allows the presentation to be transferred & played successfully   * Use software presets to import, save & export images & sounds for a specific purposes & give reasons for choices * Use music software to create more complex musical pieces with several tracks & a range of instruments |

**Multimedia:** combining text, digital images & sounds

**Digital imaging:**working with still and moving digital images

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **Key Ideas** | * That the soundtrack contributes to how we feel about a scene in a film e.g. the opening * That films have settings just as books do * That there are rules to ensure continuity when shooting DV e.g. do not shoot a subject from the front & then from behind * That one can take pictures using a digital camera or a scanner & transfer them to a computer | * That a variety of shots (high & low angles, long shot & close up etc) is useful to show the audience what they need to see * That relationships of time & space need to be constructed in a film sequence just as they do in written sentences * That the way that elements are arranged within the frame of the a picture constructs a focal point * Know how to transfer pictures to a computer or other digital storage | * That films use camera angles, lighting & other devices to qualify objects in a similar way to the way in which adjectives qualify nouns in written text * That adding titles, subtitles & narration can help to make a film’s message clear * That a digital camera allows the user to review & evaluate images on the spot & make decisions about retaking them | * That transitions & other effects can help achieve a desired tone * That genre is an idea which applies to films as well as books, so films have a particular audiences & talk to those audiences in particular ways * That shooting successful DV involves taking account of what will be required at the editing stage * That digital photographs may be planned for particular purpose & audiences * That scanners & cameras have automated settings that make choices about   hoe the image is recorded | * That transitions, effects & editing rhythm can be used to achieve the desired tone in a film sequence * That the way in which documentaries & other film appear to be ‘real’ depends on how they are made * Develop a deeper understanding of the way in which different elements work together to achieve a film’s effects. * That there are compositional rules e.g. the golden section governing how the eye makes sense of a picture | * That different elements work together in complex ways to achieve a films effects * That you can switch to manual to get better control of a digital still or video camera e.g. to change the exposure, using the LCD to gauge the effect |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **Skills & Techniques** | * Use the basic controls on   a digital still/video camera/player to record & play footage   * Shoot appropriately framed still & moving images avoiding strong backlights * Discuss the setting of a film using appropriate vocab * Place DV cameras purposefully on tripods & shoot footage with a variety of appropriate framing e.g. close up when we need to see fine detail, long shot for the overall picture * Take a picture with a digital camera with the help of an adult * scan a picture & save it with support from an adult | * Sequence, crop & delete   clips with adult help   * Create a simple storyboard * Discuss the narrative structure of a film or film sequence using appropriate vocab * Shoot digital images & download to My Pictures using USB lead or media card with support * Identify a focal point in a range of images | * Import DV, add   transitions & narration with help from an adult   * Take digital photographs, evaluate them in the camera & re-take if necessary | * Use a variety of camera   angles & framing purposefully to achieve desired effects   * Compare written & filmic rhetoric e.g. compare a piece of text & film Sequence based on it * Import DV, add transitions, titles & narration bearing the audience in mind * Take digital photos for a specific purpose * Change the settings on a digital camera e.g. resolution, auto flash etc. | * Put recorded sounds &   still photographs into a DV film e.g. an advert   * Use transitions, effects & editing rhythm to achieve the desired tone in a film sequence * Evaluate images & analyse their composition with reference to their intended purpose/audience | * Compare some   documentary with some fictional representations of an event for example a historical one. Consider how they appear to be real   * Begin to consider subtle elements such as the use of off screen sounds when storyboarding * Use a range of postproduction strategies to improve a film * Evaluate film work using appropriate criteria * Explore the effect of changing the exposure on a digital still or movie camera |

**Digital imaging:** working with still and moving digital images

**Programming:** Creating programs and software

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **Key Ideas** | * That computers are just following instructions that we give them. * That we can ‘talk’ instructions out loud. * That debugging is when we look for mistakes. * That instructions must be sequenced correctly in order for them to work. | * That algorithms are instructions for computers. * That we can change the order of instructions to make something react differently. * That we can give instructions to technology to make it do something. * That debugging is important to make our work better by correcting mistakes. | * That we can break bigger problems down into smaller chunks to make them easy to work with. * That we should always test programs to ensure they are working. * That repetition is where we send and follow any instruction a number of times. * That we can create algorithms to solve simple problems. * That instructions must be in order if we want something to work. | * That we can make programs more efficient by giving less instructions which are more precise. * That we can use sensors to gather information around us to make technology act in a certain way. * That testing throughout is essential to make debugging easier. * That the more complicated the algorithm, the more complex the program. * That we can use technology and algorithms in a wide range of areas. | * That we can use repeat commands, if statements and then statements to make our programs more efficient. * That the use of variables will allow for a more open experience by the user. * That as technological experts we need to be creative and think outside the box to create solutions. * That we can use a range of inputs to control our programs. | * That evaluating our programs is essential in order to improve and them – patching. * That variables are needed in order for many real – world uses of technology to work. * That it is important to plan and map out algorithms first to ensure the most effective order is created. * That it is important to draw on past experiences and ideas, incorporating them into your work |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **Skills & Techniques** | * Give instructions to a friend and follow their instructions to move around. * Describe what happens when I press a button on a robot. * Press buttons on the correct order to make my robot do what I want. * Predict what will happen in a short sequence of instructions. * Begin to use software and apps to create movement and patterns on screen. * Use the word debug when correcting mistakes in computing. * Describe what actions I will need to do to make something happen. | * Give instructions to a friend using forward backward and turn, and physically follow their instructions. * Share the order things to be done in order to make things happen and talk about this as an algorithm. * Program a robot or software to do a particular task. * Look at a friend’s program and tell them what will happen. * Program software to make objects move. * Watch programs execute and spot where it goes wrong to debug it. | * Break an open ended problem into smaller parts. * Put programming commands into a sequence to achieve a specific outcome. * Test programs and recognize the need to debug. * Use repeated commands. * Describe the algorithm needed for a simple task. * Detect a problem in an algorithm which could result in an unsuccessful program. | * Use logical thinking to solve an open-ended problem by breaking it into smaller parts. * Use efficient procedures to simplify a program. * Use a sensor to detect a change which can select an action. * Repeated testing of a program whilst building it to ensure it works. * Use a variety of tools to create a program. * Recognise an error in a program and debug it. * Recognise that an algorithm will help to sequence more complex programs. * Recognise that using algorithms will also help solve problems in other learning. | * Decompose a problem into smaller parts to design an algorithm for a specific outcome and use it to write a program. * Refine a procedure using repeated commands to improve a program. * Use a variable to increase programming possibilities. * Change an input to a program to achieve a different output. * Use IF and THEN commands to select an action. * Talk about how a computer model can provide information about a physical system. * Use logical reasoning to detect and debug mistakes. * Use logical thinking, imagination and creativity to extend a program. | * Deconstruct a problem into smaller steps, recognising similarities to solutions used before. * Explain and program each of the steps in my algorithm. * Evaluate the effectiveness and efficiency of my algorithm while I continually test the programming of that algorithm. * Recognise the need to use a variable to achieve a required output. * Use a variable and operators to stop a program. * Use different inputs including sensors to control a program. * Use logical reasoning to detect and correct errors. |

**Programming:** Creating programs and software