The Wokingham Computing Curriculum
Lower KS2: Year 3 and Year 4

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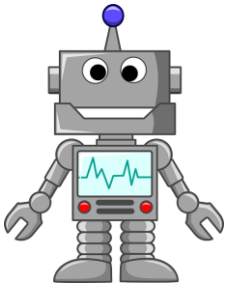
WOKINGHAM BOROUGH COUNCIL

The Computing Curriculum

The core of computing is **computer science,** *in which pupils are taught the principles of information and computation, how digital systems work and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use* **information technology** *to create programs, systems and a range of content. Computing also ensures that pupils become* **digitally literate** *– able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world. – Computing in the National Curriculum – A Guide for Primary Teachers by CAS NAACE*



For Guidance on how to plan and use the Wokingham Computing curriculum, please see **The Wokingham Computing Curriculum Planning Guidance 2014**

The

National Curriculum Computing programmes of study: 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
- 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
- Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

Wokingham Schemes Overview for Lower KS2 (Years 3 and 4)

NB Statements in red are specific to E-safety

Computer Science (CS)	**Programming, Coding and Controlling Devices** In this strand pupils will explore computer programming and computational thinking in different contexts – they will relate this to the world around them. The focus on algorithms (A set of instructions to solve a specific problem) at key stage 1 leads pupils into the design stage of programming. They use algorithms in the start of the process of creating working code, and identifying the steps needed to solve the different problems presented to them. Pupils should have opportunities to explain the thinking behind their algorithms, talking through the steps and explaining why they've solved a problem the way they have. They also need to be able to look at a simple programming project and explain what's going on and debug when it doesn't work. • Transfer skills to screen to program objects on screen using code – relevant to the given software • Explain code in a program and debug to improve or correct errors • Learn how to use variables in their code to change events e.g. changing the number of steps or size of angle and discuss consequences • Learn how to be more efficient with code using repeat and loop commands to achieve specific outcomes • Understand that objects can be controlled by other conditional inputs; "if the object hits a wall then..."; "If object touches another object then ..." • Solve problems by decomposing code into smaller parts by using procedures
Computer Science (CS) & Digital Literacy (DL)	**Digital Exploration** In this strand pupils will find effective ways of searching for information on the Internet and consider personal safety. They will explore concepts such as where information and digital files are stored, who might create them and how search engines find information. They will understand not all information is correct and plausible • Familiarisation with digital content and storage systems (school network, Wi-Fi at school/home, cloud networks, internet, media storage) • Staying safe online • How to deal with inappropriate content • Storing and retrieving digital content in different contexts • Begin understanding search engine technologies and developing search techniques to refine searches for specific content
Digital Literacy (DL)	**Communicating and Collaborating** In this strand pupils will explore communication and collaboration tools. They will consider the e-safety rules and how this keeps them safe at school but also consider them in a wider context. They will learn how contributions online are stored and how to be a responsible member of online communities. • Importance of keeping personal information private on the web • Use a wide range of tools to communicate and collaborate online in different curriculum contexts • Know the school e-safety policy and how to behave responsibly • How to respond to online issues e.g. cyber-bullying • Being a responsible member of a connected community

Information Technology (IT)	**Multimedia** In this strand pupils will create multimedia content in different curriculum contexts. (This unit relates closely to Digital Imagery, Music and Sound as well as Communicating and Collaborating) • Communicate ideas using text, graphics and sound • Publish work collaboratively on a VLE/ learning platform for different audiences (Also see the strand Communicating, Collaborating and Publishing) • Record and present information using a range of media for a particular audience • Be knowledgeable of the school's e-safety rules and adhere to them – In particular when using the Internet to find or link to resources • Consider good design features and specific layouts when creating media for print, multimedia or online presentation • Plan, design and style content for a presentation, combine a range of sources, considering the intended audience
	Digital Imagery In this strand pupils will explore digital images in different contexts. • Use a range of graphics, paint packages to create different features and effects when creating different images • Use cameras and capture devices and import photo manipulation software to enhance mood or create different effects • Use animation and film creating and editing software to create a sequence to communicate a story or idea • They will also consider safe searching, copyright and privacy issues when sharing images with a wider audience
	Music and Sound In this strand pupils will explore and create music and sound in different contexts. • Explore digital musical instruments and recording devices – they will know how their sounds are stored and played back through different media • Understand that their sound can be added to different software to create multimedia • Learn to use different software to create, edit and manipulate sounds
	Collecting, Analysing, Evaluating and Presenting Data In this strand pupils will explore data in different contexts.They will explore data manipulation in different contexts, they will use charting software and databases to collect and present their data to support science, geography, maths and D & T. They will use data loggers or Apps on tablets to capture data. They will be introduced to simple spreadsheets to carry out calculations. • Represent data on screen using frequency charts, pictograms, bar charts and graphs for different purposes • Sort and search the data to answer specific questions • Use a variety of tools to collect data – Data loggers, weather stations, Apps on tablets, fitness related tools • Use the data collected to interpret, recognise patterns, describe events and answer questions • Consider the accuracy needed when collecting and storing data • Begin to develop knowledge about how data is used in the world around them how/where it is collected. They will also consider issues such as accuracy, privacy and keeping data safe • Use spreadsheets to develop an understanding of simple functions and create a simple budget

Lower KS2 Programming, Coding and Controlling Devices (Computer Science)

Year Group	Year 3	Year 4
Learning Objectives	• Write simple **algorithms** to accomplish specific goals using a **programmable device** or object on screen • Understand how a **program** may be broken down into smaller parts and that these are all part of the **code** • Understand a program can be changed through the use of variables e.g. changing the number of steps or size of angle • Use **repeat** and **loop** commands in **code** to achieve specific outcomes • Understand how a program can control **outputs,** illustrate using a flowchart to show how everyday devices work	• Design, write and **debug code** that accomplishes a specific goal • Understand the purpose of a **procedure** to shorten **code** writing • Write **code** to create, test and edit a **procedure** and then combine procedures to produce effects. Understand the effect of changing **values** within a procedure • Understand how inputs can be used in **coding** to control **outputs** • Understand that objects can be controlled by other **conditional inputs**, *"if the object hits a wall then…", "If object touches another object then …"*
Teachers enable progress	• Set different problem solving tasks to enable children to write, test and **debug code** • Give opportunities for interactions with games, simulations or Apps. Ask them to talk about the **code** and, *"What would happen if …"* • Discuss how software and **devices** need a specific programming language known as **code. Coding** may make use of **flowcharts** or be icon based, both of which can be used to control **devices or write** software for a game or App. • Talk about and demonstrate how a long **code** may consist of a sequence of smaller parts. Demonstrate how sequences of **code** can be shortened or made more efficient through the use of **procedures**, **repeat** commands or **loops** • Discuss the need for accuracy in the order and **syntax** of commands especially as the **coding** becomes longer or more complex • Demonstrate the link between an input device such as a switch, sensor, variable or keyboard, the chosen effect on the output and how this link is part of the code • Explore conditional operations in the coding. Ask children to use the **If** conditional statement e.g. *"if an object meets a wall then…"* • Talk about how **programming** and **code** is used in the world around us	
Children will…	• Solve open ended problems with a floor robot or an on-screen program • Investigate how everyday devices are controlled using inputs and outputs e.g. automatic doors, kettle, traffic lights, microwave oven • Draw flow diagrams, (**algorithms**), to show how everyday devices work (movement, sound, light etc.) • Explore **loops** and **repetitions** to shorten the code • Plan, create and **debug** more complex sequences of instructions to achieve a specific outcome • Explore conditional **If . . .** statements e.g. program an object to move until it touches or hits something then stops • Begin to explore **variables** such as values (time, change in length, angle, count, scoring system) • Understand that **outputs** can be controlled using **code**	• Create, test, edit, save their own code enabling the onscreen object to carry out a specific task by using conditional **If**, **repeats** and **loops** • Build sequences of instructions to create **code** to solve specific problems being aware of the need for accuracy • Draw more complex patterns using **repeats** and **loops** by shortening the **code** to create **procedures** • **Debug** my own **code** and the **code** of others • Explore changing values and using variables (time, change in length, angle, count, scoring system) • Investigate conditionals in coding by looking at examples such as, "*if input 1 is off then turn on output 3*" • Understand how **code** is used to control physical systems in the real world e.g. bar codes, cash machines, TV control and drink dispensers
Lesson content (Exemplars)	• Use Scratch, Logo or a programmable robot to draw 2D shapes using repeat commands • Investigate the result when particular values are changed such as the length of side of a triangle or steps across the screen • Create a simple animation on screen to allow objects to interact with each other • Create a game with a simple scoring system for catching objects • Make simple procedures so the code may be shortened e.g. "To Pentagon" in Logo for drawing a pentagon and use several procedures to produce a complex picture	• Investigate outputs using a control box and how the code may turn various outputs on and off e.g. traffic lights or lighthouse • Check the accuracy of codes by testing and evaluating the intended outcomes –debug where necessary • Creating a game, link the scoring to If statements • Use coding to solve a particular problem e.g. create a chasing game using loops, repeats, conditional statements and procedures in the code
Suggested Resources	Floor robot e.g. Probot, Roamer Too, screen sprite and backgrounds, 2DIY, Flowol with simple mimics, control box, Scratch and Pico board, Scratch 2.0 (online), Espresso Coding, Purple Mash 2 Code http://www.bbc.co.uk/programmes/b01r9tww **IOS APPS** - Cargo Bot, Daisy the Dinosaur, Kodable, Hopscotch, 2Code – Purple Mash	

Lower KS 2: Digital Exploration (Digital Literacy and Computer Science)

Year Group	Year 3	Year 4
Learning Objectives	• Use the Internet safely to search and a find a range of information to answer questions • Understand there might be a variation in results when different combinations of words are entered into a search engine • Begin to adapt questions based on search results • Begin to understand the parts of a computer network internal to the school • Know what to do when inappropriate material appears on the screen	• Search for and use information from a range of sources and make judgements about its usefulness when following straightforward lines of enquiry • Adapt questions based on search results • Know what to do when inappropriate material appears on the screen and think about the implications at home • Understand how to use search engines effectively by comparing the results when slightly different combinations of words are entered • Begin to understand the parts of a computer network, both internal and external to the school
Teachers enable progress	• Demonstrate simple searches to find specific information from a variety of web sites • Demonstrate that by changing the search key words they will affect the results returned • Illustrate that some results obtained from a search are more relevant than others and how searches are ranked and ordered • Understand that a search engine indexes pages and content – e.g. images • Explain that some search engines have restricted content for their benefit and that some can access a wider range of information • Develop an understanding that different parts of a web search page will have different priorities (adverts, paid for content, ranked lists) • Demonstrate a website has a unique address (a url, uniform resource locator) • Ensure children's understanding and use of school e-safety rules • Explain that anyone can be an author on the internet and that the accuracy and quality of the information depends on the author • Explain how the school's computers are connected together and what the main parts of the network do. Show how it connects to the wider world and the Internet.	
Children will…	• Using safe search engines designed for children to find relevant information linked to their project • Select key words from a theme to consider how relevant each search term will be • Begin to discriminate with the words entered into a search engine • Begin to scan through search results and decide which is the most relevant result • Talk about and describe the process of finding specific information • Be confident in how to respond to inappropriate material on screen • Draw a diagram to show the school's Local area network how the computers and other devices are connected together and what the main parts of the network do.	• Scan through search results and decide which is the most relevant result, consider how some searches are ranked • Search, evaluate results, re-search for a particular piece of information through modifying the search terms • Understand that web sites have a specific address e.g. www.bbc.co.uk/ and understand that they can be copied and pasted to create hyperlinks • Be aware that web sites are not always accurate and that information should be checked before it is used • Be confident in how to respond to inappropriate material on screen and consider actions at home as well as school. • Draw diagrams to explain how the school network is connected to the Internet and computers beyond the school
Lesson content (Exemplar)	• Children have to discriminate which search results are relevant and which are irrelevant from a prepared set of results • Show children two pages - one that is relevant to the topic under discussion and the other with misleading information. Ask the children to discuss and decide which is best • Ask the children to write a description of the school with one piece of inaccurate information. Swap their descriptions and find inaccuracies.	• Ask children to search a particular piece of information but only allow them to type in two words. What words would they use? Each child can then change just one word to try and improve their results. • Discuss the implications of inaccurate information on a website
Suggested Resources	Child centred websites on a variety of internet enabled devices, child safe internet search engines, school e-safety rules, word processor or VLE/ learning platform page to paste information We recommend when planning this unit you refer to a key resource available through the SWGfL: http://www.digital-literacy.org.uk/Home.aspx	

Lower KS2: Communicating and Collaborating (Digital Literacy)

Year Group	Year 3	Year 4
Learning Objectives	• Explain that passwords are used to log in to resources on the web and why these should be kept private • Understand there is an accepted behaviour when communicating in the real or virtual world • Share ideas responsibly with others using a range of tools • Compare and use different forms of communication, considering their advantages and disadvantages	• Demonstrate an understanding of the rules and possible implications of e-safety when collaborating on projects • Consider an intended audience and its implications when communicating • Use a greater range of tools to communicate and collaborate
Teachers enable progress	• Remind children of the importance of keeping personal information private and what is sensitive or personal information • Explain that online activity leaves a digital trail • Discuss "Digital Footprint" and that material once posted can be copied, shared or archived by others resulting in the original author losing control • Create opportunities for pupils to share and contribute ideas, respond to each other, to guests or other schools using online tools appropriately • Provide opportunities for children to communicate and collaborate considering quality and appropriateness of responses • Discuss the different ways in which people are connected online across the world	
Children will…	• Know and follow the rules for using communication technologies safely • Discuss other methods of communication and the importance of appropriate behaviour and personal safety at home and school • Compare all the different forms of electronic communication on different devices, considering their advantages and disadvantages • Compose and respond to blogs, forums etc. with their own ideas, considering audience and appropriate language and personal safety • Publish best pieces of work online (when publishing, refer to the Multimedia Unit.)	• Discuss e-safety and how to keep safe when using online communications at home and at school and with an understanding of appropriate online etiquette • Embed other types of files into online spaces • Discuss and use a variety of forms of communication, considering their advantages and disadvantages. Consider audience and appropriate content • Reflect on the digital footprint left by an online activity • Use different forms of electronic communication (messaging, blogs, forums) whilst considering audience and style • Discuss how to be a responsible member of a connected community and how to deal with inappropriate content or cyberbullying
Lesson content (Exemplar)	• In literacy, children use a forum for collaborative story writing, repetitive poem, character description or discussion • Use a forum or blog to add pictures of their view from a window with details of what their school is like. • To develop "ask an expert" discussions on a topic being developed in class • Answer a survey on books that they have read enabling them to contribute to a class book review • Hot seating on a forum: use a historical character in role, generate and ask questions • Collaborate with peers on a project to show learning on a specific topic e.g. flowering plants • Share art work for peer review	• Use a guest on the forum to find out about life in a city in India • Children contribute to a wiki on different aspects they have researched on a topic • Embed games, photo stories, videos on a VLE/ learning platform or web page • Share games they have created in coding projects for others to play • Collaborate on wiki pages, using text and images for a presentation of a topic work • Children use the forum tools for peer evaluation e.g. of their art work, music or poetry • Create a presentation about responsible use of social and online communities • Use drama to reflect on issues of cyberbullying and how they would react and cope • Sharing information on a Wiki - contributing to a locality study across a number of schools
Suggested Resources	Publishing software, VLE/ learning platform tools, Online Educational Community e.g. Edmodo, blogs, wikis, and forum tools *Key resources can also be found through the SWGfL Digital Literacy Curriculum to support key aspects of safety and being a responsible digital citizen http://www.digital-literacy.org.uk/Home.aspx	

Lower KS2: Multimedia (Information Technology)

Year Group	Year 3	Year 4
Learning Objectives	• Record and present information integrating an appropriate range of media for a given audience, combining text and graphics in a printable form • Know they can publish resources online to a given audience • Be knowledgeable about the school e-safety rules	• Design and create their own multimedia projects showing awareness of appropriate design and layout for their intended audience • Know they can publish resources online to a given audience or to the wider world understand the need to ensure it is appropriate and copyright free • Consolidate the school's e-safety rules
Teachers enable progress	• Compare and evaluate different multimedia, online and printed styles and designs to suit a variety of audience and publication types (newspaper, news web site, poster, menu, leaflet , shopping web page, magazine, e- book) • Provide a range of cross curricular projects where they can create content and understand different design features and layouts • Provide opportunities that consolidate and extend multimedia skills making use of peer evaluation to improve outcomes whilst thinking about their audience • Talk about the purposes of different types of printed or online media and what may make them persuasive or otherwise • Discuss the rules concerning appropriate use of materials from other sources especially copyright • Consolidate the school's e-safety rules	
Children will …	• Recognise the difference and the advantages and disadvantages between electronic media and printed media • Combine text and graphics in different layouts, font formats, graphics and images for different purposes or audiences • Select suitable information from different sources and prepare it for processing in a multimedia presentation • Use appropriate editing tools to ensure their work is clear and error free using tools such as a spell checker and thesaurus • Begin to use hyperlinks to other resources and understand that outside sources must be checked by the teacher • Know the risks attached to seeking resources on the Internet in school • Discuss how they have developed design and layout features for a specific audience • Through peer assessment and self-evaluation, suggest suitable improvements	• Evaluate a range of electronic multimedia, appropriate to the task and audience. • Recognise key features of layout and design and discuss what makes a good design • Consider design and style features in their layout and select appropriate fonts, colour and features to suit the context • Select and import sounds, video clips and graphics to include in their presentations • Know the risks attached to seeking resources on the Internet • Be aware of copyright and plagiarism when creating presentations • Use hyperlinks to link to web pages or other pages whilst being aware of e-safety requirements • Through peer assessment and self-evaluation amend and improve work by considering style, purposes and audience and make necessary changes
Lesson content (Exemplar)	• Create a set of estate agent's details to sell a roman villa • Create, edit and illustrate shape poems • Write and present a newspaper article about evacuees in WWII • Create an on-screen guide about a local place of worship • Improve a deliberately faulty piece of multimedia • Create menus and posters for their cake sale • Create a story book for an infant child	• On a school trip children collect digital images, video, and sound samples and use these to produce a multimedia presentation fir peers in their class • Children create a cross-curricular explanation text on a geography topic with hyperlinks to further details • Create an e-book to illustrate a history topic to go in the library • Children make an audio recording of poems they have written and use them in a multimedia presentation for a presentation to parents
Suggested Resources	**DTP Tools** Purple Mash Creative Tools: 2Publish 2Publish Extra, 2Publish Projects, Word, Publisher, PhotoStory **Multimedia Authoring Tools:** 2 Create a story, 2Create a Super Story, Clicker, Textease, Kar2ouche, PowerPoint, iPad and tablet apps, Web2 applications **Other Resources:** microphone and digital sound recorder, digital microscope, camera **Web and publishing** VLE/ learning platform	

Lower KS2: Digital Imagery (Information Technology)

Year Group	Year 3	Year 4
Learning Objectives	• Select, manipulate and combine images using software to accomplish a task • Take and manipulate digital images using a range of devices beginning to take account of moods or ideas when framing and editing a shot. • Understand that images can be shared and viewed online and consider the privacy of themselves and others	• Combine and evaluate digital images taking account of the audience • Consider the quality of their work and their intended audience when creating animation, images or film • Discuss privacy in terms of using and sharing digital images
Teachers enable progress	• Provide opportunities to take digital images of a variety of subjects and discuss and evaluate the importance of different factors in the impact of the image on the audience e.g. format, landscape, portrait and framing • Show that films can create different moods and discuss the reasons for this e.g. factual, spooky • Model that evaluation and improvement is a vital part of a design process and that the technology enables quick and efficient editing • Show children how to search safely for images and how to report concerns • Discuss privacy and permissions in terms of using and sharing photographs	
Children will…	**Graphics Packages** • Acquire, store and retrieve images from devices or Internet. Edit using paint packages or photo-manipulation software to change and manipulate an image (e.g. copy/paste/crop/make a stamp) • Talk about changes they can make to achieve a specific outcome • Through peer assessment and self-evaluation, evaluate and suggest suitable improvements **Digital Imagery** • Begin to take pictures or video thinking about the purpose of the image and recording- consider mood, aspect and framing • Make choices such as landscape and portrait using the enhanced tools • Discuss and evaluate the quality of their own captured images and make decisions (e.g. keep, delete, change) • Manipulate images to change the mood e.g. by changing colours or light levels • Use images or video clips in their multimedia unit • Build their awareness of sharing images online – consider what is personal and what might need permission **Animation** • Create a short animated sequence to communicate a specific idea.	**Graphics Packages** • Begin to enhance a presentation by acquiring, storing and retrieving images from different sources • Use paint packages or photo-manipulation software to change and manipulate an image appropriate to audience or task • Through peer assessment and self-evaluation, evaluate, suggest and make suitable improvements • Talk about their choices and changes they have made to achieve a specific outcome or purpose **Digital Imagery – Including Video** • Using devices to take pictures and video, thinking about the purpose of the image and controlling the device appropriately • Talk about different films and how they are directed to create different moods and effects • Plan (storyboard), edit, combine and still and moving images to create a short film or trailer. Add titles, credits and music • Understand how films are shared online consider the issues of appropriateness and privacy as they build their awareness of safe sharing online
Lesson content (Exemplar)	• Children take photographs of the "view through our window" and sequence/ annotate them to illustrate change • Children make a video of a weather forecast around the world • Use animation to illustrate the water cycle • Illustrate Literacy work on fantasy settings by manipulating an image,	• Create pop-art style images by changing effects of a still image • Create a copy of a TV program to fit with other work (e.g. Weakest Link, Henry VIII's wives, historical "Through the Keyhole" or cookery programme) • Children create a persuasive trailer for a film
Suggested Resources	**Graphics:** Paint.NET, 2Simple – 2Paint a Picture, Purple Mash: 2Paint, 2Design and Make **Animation:** 2Animate,Puppet Pals app, Stop Motion app **A range of digital capture tools:** e.g.digital camera, tablet, other image capture devices, visualisers, microscope **Video Editing**: Imovie, Windows Live Movie Maker **Sharing** their work on the VLE/learning platform	

Lower KS2: Music and Sound (Information Technology)

Year Group	Year 3	Year 4
Learning Objectives	• Understand that technology allows easy creation, manipulation and change • Select and use appropriate sound files to fit a given context • Know that sound files can be uploaded to the internet and shared across a wider audience	• Use music technology individually or as a group to create, develop, amend and present their ideas • Understand that evaluation and improvement is a vital part of a creative process • Use technology to compose music or sounds including creating melodies • Upload sound files to the internet to share with a wider audience
Teachers enable progress	• Talk about software which allows easy manipulation and creation of sound and music • Insert music and sounds into other presentations talking about suitability of choices • Provide existing sound files for use in a presentation • Demonstrate how to use music or sound editing software to create, evaluate and improve a simple multipart composition • Explore the range of sounds from an electronic instrument for a specific audience • Discuss copyright when selecting music and sound • Teach how sound files can be uploaded to the internet in a relevant and safe context	
Children will…	• Select and record voice and sounds e.g. tape recorder, Dictaphone, digital voice recorder, Talking Tins • Use music software to organise and reorganise musical phrases using icons to create a piece of music for a theme and talk about how technology enabled them to do so • Use sound editing tools to edit merge, sound effects and music to create a sound story	• Use music software to organise and reorganise musical phrases to create a piece of music for a theme • Record their voice and other sounds using the sound recording tool to add to their presentations or information • Use technology to combine and layer sounds to create sound stories or backing tracks • Share work on the internet for others to play and review • Know the school's e-safety rules and the risks involved when sharing resources on the Internet
Lesson content (Exemplar)	• Children record speech and sound effects to accompany their writing e.g. to be played alongside • Add spoken French to a presentation/image (MFL) • Compose music or sound effects to accompany poems, stories, drama, dance • Compose music or sound effects to fit with a topic theme	• Pentatonic compositions to accompany images and film clips • Using music software that allows pupils to create and edit a melody (Music – Dragon Scales) • Use Audacity to record and perform a poem or play; add layers of voice, sound effects and music • Upload recording as podcasts onto a VLE/ learning platform to share with a wider audience • Children create a persuasive trailer for a film
Suggested Resources	**Music composition software:** e.g. Black Cat Compose, Compose World, Notate, 2simple music toolkit **Online tools:** Purple Mash 2Sequence, Music creator ROC **Sound Manipulation:** Audacity (free, Podium **Sound Capture:** Microphone and digital sound recorder; electronic keyboard **Multimedia software:** to record sound straight into (e.g. 2Create a Super Story, Kar2ouche, PowerPoint, Photostory 3, VLE/ learning platform tools www.findsounds.com,	

Lower KS2: Data Handling - Collecting, Analysing, Evaluating and Presenting Data (Information Technology)

Year Group	Year 3	Year 4
Learning Objectives	• Understand that collecting and organising information using ICT makes it easier to find answers to questions • Understand that ICT can be used to create pictograms, bar charts and tables that illustrate data for different purposes -using different scales with bar charts • Talk about their use of ICT and describe how it supports their learning • Know there is a variety of devices than can collect or capture data • Know data is collected and used in the world around them, and understand the need for keeping personal data safe	• Understand the importance of entering data correctly • Know that ICT can create different graph types for different purposes and some are more appropriate and easier to read than others • Understand the difference between a database and a spreadsheet. A database is a collection of information organised and presented to serve a particular purpose. A spreadsheet is used when we wish to do some calculations on the data held within it. • Know that personal data is stored on systems; understand the need to be accurate and keep it private
Teachers enable progress	• Develop opportunities to use ICT to collect data including the use of data loggers and measuring Apps within cross curricula contexts • Demonstrate how they can use data to solve problems and answer questions through the use of different graph types and using a variety of scales • Set problem solving activities that require the children to collect data specific to a topic, use it to generate graphs and charts to both generate and answer questions • Model and discuss the need for accuracy and the possible implications if the data is entered incorrectly • Discuss where data is used in the world around them; how/where it is collected. Consider issues such as accuracy, privacy and keeping data safe • Model how a database works and how different types of data can be entered and stored within fields such as numbers, text, keywords or multiple choice items • Demonstrate using a spreadsheet with simple formula to illustrate how quick changes can be made to the data - such as listing prices in a shopping list. • Show how pre-defined formula can be used e.g. Sum to add columns or rows of numbers quickly • Outline the main differences between a database and a spreadsheet	
Children will…	• Create frequency tables, pictograms and bar charts to illustrate results, annotate observations and answer questions related to the data • Collect data to solve a problem by choosing an appropriate graph to display their answers • Compare different charts and graphs and understand they are used for different purposes and that they may have different scales • Use data logger or measuring Apps to collect data. Explain how the device represents and records changes in data. Use data to see patterns, describe events and answer questions • Enter data into a pre-defined database use the information to answer a specific question • Use the data produced to answer specific lines of enquiry by sorting and creating bar charts or line graphs • Talk about how ICT can be used to create, present, organise and amend different types of data and how it automates the process • Know where different types of data can be stored e.g. schools, doctors, banks, shops, and that it needs to be kept safe with secure passwords	• Determine the data needed to answer a specific question; organise, present, analyse and interpret the data in tables, diagrams, tally charts, pictograms and bar charts using a graphing package or a database where appropriate • Use a data logger or measuring App to log discrete and continuous data. Understand the difference between discrete and continuous data • Interpret the data collected to see patterns, describe events and answer questions • Understand and use a greater range of scales in their representations of the data • Understand the importance of accuracy when collecting and entering data into a database • Enter data into a spreadsheet and illustrate choosing the most appropriate chart • Enter data into a spreadsheet and make use of the simpler functions such as sum, and simple calculations(+ - x ÷) to create a budget e.g. for a cake recipe • Understand that a spreadsheet can perform calculations on the data held within it • Know that personal data is stored on systems, discuss the need to keep it safe with passwords and other devices (finger print, security cards, iris scans)
Lesson content (Exemplars)	• Children collect weather data and use this as part of their work in comparing weather around the world. They could use a data logger to record local data • Children use a heart monitor in PE to record changes to the body during exercise • Continuous temperature data of the classroom is recorded to show daily variations	• Use a prepared database containing inaccurate information to illustrate the importance of entering data accurately (rubbish in, rubbish out - RIRO) • Take a data logger for a walk recording light, sound and temperature • Use data logger to illustrate how insulation slows the cooling of warm water • Explore the use of simple formulae in a spreadsheet setting up a worksheet to do calculations, +, -, * and / - to calculate a class budget or recipe
Suggested Resources	**Database Software:** *e.g. Textease database, Information Workshop, Purple Mash – 2Investigate* **Graphing Software:** *2Graph, Excel, RM Starting Graph, Textease* ***Spreadsheet****: 2Calculate, Excel* **Other:** *Data loggers and software – Apps on iPads or Android devices*	