Subject Aims

- can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation

- can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems

- can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems

- are responsible, competent, confident and creative users of information and communication technology

Subject Vision

At Silverdale St John's, we want our children to be fully prepared for their future in an ever changing world of technology. Our children will be taught skills in problem solving and logic which will be transferable to different technologies, many of which we do not yet know about. We will teach our children to be competent in basic computer use which will help them as they move on in their education and later careers. We want our children to have the correct vocabulary and an understanding of how simple computing systems work. Our children ill be given oportunites to explore

Inspiring success through learning, community and faith.

We strive to provide the Christian foundations to enable our children to make good decisions. Our children will be inspired, guided and supported to achieve success, as they are all of infinite worth. Taught through a creative curriculum, our children will become global citizens and will care for all of God's creation.

I can do all things through Christ who strengthens me.
Philippians 4:13

Learning	Community	Faith
Through Computing lessons children will learn how to navigate themselves around a computer or laptop.. The technologies available to our children now will be different when they enter the working world, it is vital children not only learn how to navigate current technologies but are equipped with computational skills that will be able to be applied to an ever changing teachnological world	We will invite in experts to lead extra curricular computing clubs. We will seek to give children opportunities to meet people in our wider community who rely on technology for their jobs and careers. Our children are much more advanced in technology than some older members of our community. We will hold online safety workshops to ensure our parents and families are up to date with the newest advice on keeping children safe online.	Through the use of the internet, social media, open forums and online communication, children will begin to be exposed to a wider world. Our children will be aware of the importance of displaying and upholding our Christian values in all communciations. Whether that be through virtual interactions with their peers or appropriate interactions with people on forums and other open communication platforms.

Information Technology

Information Technology	
Programme of Study	
▪ Use technology purposefully to create, organise, store, manipulate and retrieve digital content.	
Skills	**Knowledge and Understanding**
Create, Manage and Manipulate Digital Content	**Create, Manage and Manipulate Digital Content**
Text and images	**Text and images**

On a range of devices:
 	
    Develop correct use of the keyboard (e.g. spacebar, backspace, delete, shift (not caps lock) and enter keys).
    Add captions to photos and graphics.
    Select text appropriately e.g. highlighting or clicking text to select.
    Make simple changes to text e.g. colour, style and size.
    Select text from word lists (if necessary).
    Select appropriate images to add to work.
    Word process short texts directly onto the computer (i.e. do not just copy up handwritten work).
    Navigate round text in a variety of ways e.g. mouse, arrow keys, touch, when editing work.
 	
▪ Save and store work in an appropriate area, and be able to print, retrieve and amend it.
▪ Use a range of digital devices to capture and save both still and moving images. These could include digital cameras, video cameras, tablets,
▪ Refine the use of shape, line and colour to communicate a specific idea or artistic style/effect through various tools including brushes, pens, lines, flood fill, spray and stamps.
▪ Talk about their use of graphics package and their choice of tools.
▪ Begin to make changes to images e.g. cropping using basic tools in image manipulation software.
▪ Upload images or video from cameras and other digital devices to a computer, or into a document, with support if needed.
▪ Create a sequence of images to form a short animation.
▪ Change the content of a project for a specific audience.
▪ Begin to add different forms of media together e.g. text and images in blogs or word processing documents.
▪ Organise and name files appropriately and accurately.
	▪ Know that text can be different colours, sizes and styles and that these can easily be changed.
	▪ Know that technology can be used to communicate ideas in different ways, e.g. text, images, tables and sound.
	▪ Understand there are a variety of tools in graphics packages, each fulfilling a different purpose.
	▪ Know that there are various ways of capturing still and moving images.
	▪ Know the importance of giving an appropriate name to files.
	▪ Know that files can be stored in folders and how the structure of the directory is ordered.
	▪ Understand that files can be retrieved from their location and edited.
	▪ Know what the term multimedia means.
	▪ Understand the differences between a graphics package and paper based art activities.
	▪ Know that there are various ways of capturing still and moving images.
	▪ Understand the need to frame an image or scene and keep the camera still.
	▪ Understand that animation is a sequence of still images.
	▪ Know how to take images appropriately and responsibly.
	▪ Understand how the mood of a piece can easily be changed through use of text, graphics and sound
	▪ Begin to understand that images, sounds and text can be subject to copyright.
	▪ Start to understand that content needs to be changed according to the audience.
	▪ Understand the importance that files need to be Organised and named files appropriately and accurately.

Sound	**Sound**

• Explore a range of electronic music and sound devices and software. • Be able to listen to and to select a sound from a bank of pre-recorded sounds. • Use sound recorders, both at and away from the computer, to record and playback sounds e.g. voices, instruments, environmental sounds. • Use software to explore and create sound and musical phrases for a purpose. • Use basic editing tools to change recorded sounds (speed up, slow down, reverse, echo) to alter the mood or atmosphere • Use recorded sound files in other software applications. • Be able to save sound files. • Be able to share recordings with a known audience.	• Understand that most devices have stop, record and playback functions. • Be aware that sound can be recorded and stored on the computer as a sound file.

Data handling	**Data handling**
• Develop classification skills by carrying out sorting activities • Use simple graphing software to produce pictograms and other basic tables, charts or graphs. • Use graphing software to enter data and change a graph type, e.g. pictogram to bar chart. • Interpret the graphs, discuss the information contained and answer simple questions. • Sort and classify a group of items by asking simple yes / no questions. This may take place away from the computer, e.g. a 'Guess Who' game. • Use a branching database program to sort and identify items. • Use basic search tools in a prepared database to answer simple questions e.g. how many children have brown hair?	• Understand that IT can be used to sort items and information. • Understand that IT can be used to create and display charts graphs. • Develop an understanding of what datalogging can be used for (Science). • Understand that IT can be used to add to and change charts and graphs quite easily. • Begin to understand that unless data has been entered accurately it cannot be used to provide correct answers to questions.

Digital research – searching	**Digital research – searching**
• Locate specific, teacher defined, age appropriate websites through a favourites menu and /or by typing a website address (URL) into the address bar in a web browser. • Use technology to source, generate and amend ideas e.g. searching a resource such as Espresso for images by a specific artist. • Talk about their use of technology and other ways of finding information, e.g. books, asking other people. • Use and explore appropriate buttons, arrows, menus and hyperlinks to navigate teacher selected web sites, and other sources of stored information. • Use key words to search a specific resource for information, e.g. Espresso and other websites, under the guidance and supervision of an adult. • Be able to retrieve files from a computer using a search of the computer.	• Begin to understand that some websites are more useful than others when searching for topics. • Understand that technology can give rapid access to a wide variety of information and resources, including internet, TV, DVDs • Understand that there are different ways of finding information, e.g. books, asking other people • Understand that different forms of information, e.g. text, images, sound, multimedia exist and that some are more useful for specific purposes than others. • Understand that files can be retrieved and found on a computer using a search of the computer. • Understand and discuss how information can be obtained and used to answer specific questions. • Understand a website has a unique address and the need for precision when typing it. • Begin to understand that not everything on the internet is true. • Be aware that they can be accidently diverted from websites through a link to a new website, advertising or pop-ups.

Digital Literacy

Programme of Study

- 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.

Skills	Knowledge and Understanding
Online safety	**Online safety**
- Use technology safely. - Keep personal information safe. - Use technology respectfully. - Recognise situations involving content and contact that are not safe, (e.g. In emails, text messages, videos) and know where to go for help. - Minimise screen, turn off the monitor, or use back buttons to return to the home page if anything inappropriate appears on the screen.	- Know what it means to use technology safely. - Understand what is meant by personal information. - Understand how to keep personal information safe online. - Know the rules for keeping safe online. - Understand that personal information, e.g. email address, usernames, passwords, home address or telephone number should not be shared, either online or offline, without a trusted adult's permission. - Know that they should not ask to meet anybody from the online world in the offline world. - Know and abide by the school's rules for keeping safe online (age appropriate). - Understand that technology should be used respectfully. - Know where to go for help and support when they have concerns about content they have seen on the internet or other technologies. - Know where to go for help and support when they have concerns about contact on the internet or other technologies.
	Uses of technology
	Recognise common uses of information technology beyond school.
Electronic communication	**Electronic communication**
- Contribute ideas to class and group emails. - Send an email, using a subject heading, to a known member of the school community e.g. another class teacher, bursar. - Open and reply to an email from a known person. - Contribute to a blog, journal or forum on the school's VLE. - Develop an awareness of appropriate language to use in email and other forms of digital communication such as blogs. - Begin to use webcams and /or video conferencing as a class, if appropriate and available, with external providers, another class or school. - Talk openly about their use of online communication in school and at home.	- Understand that messages can quickly be sent electronically, via a range of devices, over distances and that people can reply to them. - Understand that an email has to be sent to a unique email address and the need for accuracy in typing the address. - Understand that electronic messages can be in the form of pictures, sound and/or text. - Understand that some emails may be malicious or inappropriate and begin to recognise when an attachment may be unsafe to open. - Understand the different ways that messages can be sent e.g. email, text messages, letter, phone, forums and begin to consider the advantages, or appropriateness, each one.

Computer Science

Programme of Study

- 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.

Skills	Knowledge and Understanding
Programming	**Programming**
- Give and follow commands (one at a time) to navigate other children and programmable toys around a course or a familiar journey, including straight and turning movements. - Plan, generate and follow a sequence of instructions (actual and on-screen) to make something happen; or complete a given task or problem to create a simple program. - Explore and create sequences of commands/instructions in a variety of programs/devices. - Make predictions and describe the effects when creating programs and controlling devices. - Identify errors in instructions. - Use logical reasoning to predict what will happen in simple programs.	- Understand that algorithms are a series of steps or instructions to achieve a specific goal. - Understand that devices respond to commands. - Understand the meaning of the term program. - Talk about devices in the home that are controlled by commands. - Understand that prediction, trial and error are important considerations when creating programs or controlling movement. - Understand that there are different ways to create or produce a sequence of commands, including verbal, recorded, graphical, pressing buttons and on screen methods. - Understand what debugging is and begin to understand that you can develop strategies to help find bugs. - Understand what logical reasoning is and how it can be used to predict what happens in simple programs.
Simulations and modeling	**Simulations and modeling**
- Explore simulations of real and virtual environments e.g. BBC science clips, virtual plants and pets. - Make informed choices when exploring what happens in a simulation. - Discuss use of simulations and compare with reality, e.g. a simulation of a science experiment. - Talk about the rules found in simulations.	- Understand that computer simulations can represent real and virtual environments. - Understand that computer simulations allow the user to explore options and make choices, recognising that different decisions produce different outcomes.

Lower Key Stage 2

Information Technology

Programme of Study

- Use search technologies effectively.
- Use and combine a variety of software to accomplish given goals.
- Collect and present information.
- Design and create content.
- Collect and present data.
- Use search technologies effectively.
- Use and combine internet services.
- Analyse and evaluate information.

Skills	Knowledge and Understanding
Design, create, manage and manipulate digital content	**Design, create, manage and manipulate digital content**
Text and images	**Text and images**
▪ Use different font sizes, colours and effects to communicate meaning for a given audience.	▪ Recognise the features of good page design and multimedia presentations.
▪ Use various layouts, formatting, graphics and illustrations for different purposes or audiences.	▪ Consider how design features meet the needs of the audience e.g. poster, news paper, menu, instructions.
▪ Use various software tools to complete a project, problem or task.	▪ Understand that some tasks and problems require a variety of software tools to accomplish them.
▪ Use page setup to select different page sizes and orientations.	▪ Understands what is meant by Internet services.
▪ Use cut, copy and paste to refine and re-order content.	▪ Understand that evaluation and improvement are vital parts of the design process and that ICT allows changes to be made quickly and efficiently.
▪ Combine and use various software tools to complete a project, problem or task.	
▪ Use appropriate editing tools to ensure their work is clear and error free, e.g. spell checker, thesaurus, find and replace.	▪ Demonstrate this through editing their work.
▪ Select and import sounds from other sources, e.g. own recordings, sound effects and music.	▪ Has an awareness of Internet services.
▪ Select and import graphics from digital cameras, graphics packages and other sources and prepare for use, e.g. cropping, resizing and editing.	▪ Recognise that IT can automate manual processes e.g. find and replace and understand the advantages and disadvantages of this.
▪ Use and combine internet services such as those that provide images, sounds, 3D representations and graphic software.	▪ Compare and contrast the impact of using different sounds, words and images from a variety of electronic sources.
▪ Recognise and use key layout and design features, e.g., text boxes, columns and borders.	▪ Develop an increasing sense of audience and talk.
▪ Insert and edit simple tables.	▪ Understand that images, 3D representations, sounds and text can be subject to copyright and abide by copyright rules when creating a presentation.
▪ Create a range of hyperlinks and produce a non-linear, interactive presentation.	
▪ Recognise intended audience and suggest improvements to make their work more relevant to that audience.	▪ Understand that presentations and projects need to be analysed and evaluated and suitable changes suggested to improve it.
▪ Through self and peer assessment, analyse and evaluate presentations and projects so that suitable improvements can be added to work.	▪ Understand that internet services such as those that provide images, sounds, 3D representations and graphic software can be used to achieve specific goals and tasks.

Data handling	**Data handling**
▪ Create frequency diagrams and graphs to answer questions.	▪ Understand that there are different types of data.
▪ Create and use a branching database to organise and analyse information to answer questions.	▪ Understand the need to structure information properly in a database.
▪ Begin to identify what data should be collected to answer a specific question.	▪ Know, understand and use the vocabulary: file, record, field, sort and search.
▪ Collect data and enter it into a database under appropriate field headings.	▪ Recognise similarities and differences between ICT and paper-based systems.
▪ Use a database to answer straightforward questions by searching, matching and ordering the contents of a single field.	▪ Talk about the advantages of using IT to sort, interrogate and classify information quickly.
▪ Based on the data collected, children should raise their own questions and translate them into search criteria that can be used to find answers to specific questions.	▪ Understand that effective yes / no questions are key to organising data efficiently in a branching database.
▪ Compare different charts and graphs, e.g., in tables, frequency diagrams, pictograms, bar charts, databases or spreadsheets and understand that different ones are used for different purposes.	▪ Understand that there are different types of data, e.g. numeric, alphabetic, date, alphanumeric.
▪ Select and use the most appropriate method to organise and present data.	▪ Know that ICT can enable the creation of a variety of tables and graphs for different purposes.
▪ Use dataloggers to capture, record and analyse data continuously over time, including sound, temperature and light. (Science)	▪ Understand some graphs and charts are more appropriate and easier to read than others.
▪ Use a data logger to 'snap shot' a series of related but separate readings in the course of an appropriate investigation. (Science)	▪ Begin to make choices about how to present data to solve a specific problem.
	▪ Understand that dataloggers can be used to sense external and physical changes and subsequently collect data in a range of simple investigations. (Science)
	▪ Understand that data can be collected more efficiently by a datalogging device compared with manual methods. (Science)
	▪ Know that datalogging devices can be pre-programmed to collect data for a given time and on different triggers and remotely for a long period of time. (Science).
Digital research - searching	**Digital research - searching**
▪ Use a range of child friendly search engines to locate different media, e.g. text, images or sound.	▪ Talk about and describe the process of finding specific information, noting any difficulties during the process and how these were overcome
▪ Evaluate different search engines and explain their choices in using these for different opurposes.	▪ Understand that information found as a result of a search can vary in relevance.
▪ Develop specific key questions and key words to search for information e.g., a question such as 'Where could we go on holiday?' would become a search for 'holiday destinations'.	▪ Begin to recognise that anyone can author on the internet and sometimes web content is inaccurate or even offensive.
▪ Consider the effectiveness of key questions on search results and refine where necessary.	▪ Understand that provision is made in schools to filter
▪ Use strategies to verify the accuracy and reliability of information, distinguishing between fact and opinion, e.g. cross checking with different websites or books.	▪ Begin to understand the concept of copyright, e.g. what images, videos or sounds are legal and safe to use in their own work.
▪ Use appropriate tools to save and retrieve accessed information, e.g. through the use of favourites, history, copy/paste and save as.	▪ Begin to understand the need to acknowledge sources of information.
▪ Identify and cancel unwanted advertising, pop-ups and potentially malicious downloads by using the task manager function and NOT through buttons on the pop-up window, or the cross in the right hand corner.	▪ Understand when and where the internet can be used as a research tool.
▪ Know how to temporarily allow useful pop-ups from a website.	▪ Know that Boolean search 'operators' can effect web searches
▪ Develop use of more advanced searching techniques, e.g., searching for a phrase using quotation marks to locate precise information.	
▪ Choose the most appropriate search engine for a task, e.g., image search, search within a specific site or searching the wider internet.	

Digital Literacy

Programme of Study

- Use technology responsibly.
- Identify a range of ways to report concerns about contact.
- Identify a range of ways to report concerns about content.
- Recognise acceptable/unacceptable behaviour.
- Understand the opportunities computer networks offer for communication.

Skills	Knowledge and Understanding
Online safety	**Online safety**
- Use technology responsibly. - To create appropriate passwords. - Keep passwords and personal data safe. - Recognise acceptable behaviour. - Recognise unacceptable behaviour. - Be able to create a 'secure' password, e.g. combination of letters, symbols and numbers in accordance with the school's eSafety policies and procedures /AUP. - Know what to do and who to tell if they discover something inappropriate or offensive on a website, at home and in school.	- Know how to use technology responsibly. - Understand that online actions can impact on other people. - Understand the need to keep personal information and passwords private in order to protect themselves when communicating online. - Know how to respond if asked for personal details or in the event of receiving unpleasant communications, e.g. saving the message and showing to a trusted adult –according to the school's eSafety policies and procedures /AUP. - Understand the risks posed by the internet relating to contact e.g. bullying, grooming. - Know a range of ways to report concerns about contact. - Understand the risks posed by the internet relating to content e.g. violent and biased websites. - Know a range of ways to report concerns about content. - Understand the school's acceptable use policy. - Understand what acceptable online behaviour is. - Understand what unacceptable online behaviour is. - Recognise that cyber bullying is unacceptable and will be sanctioned according to the school's eSafety policies and procedures /AUP. - Know how to report an incident of cyber bullying if and when it occurs, according to the school's eSafety policies and procedures /AUP. - Understand the risks involved in arranging to meet and subsequently meeting anybody from the online world in the offline world. - Know what images are suitable to include in an online profile and ensure that appropriate permissions have been obtained, e.g. copyright or asking friends before uploading their images. - Understand the need for certain rules of conduct particularly when using live forms of communication, e.g. chats and forums in the school's VLE, taking turns to speak when video conferencing. - Know the school's rules for keeping safe online and be able to apply these beyond school.

Electronic communication	Electronic communication
- Use a range of digital tools to communicate, e.g. contributing to chats and/or discussion forums, in school's VLE, blog or text messages, making purposeful contributions to respond to another pupil's question or comment.	- Understand that computer networks can be used for communication.
- Investigate the different styles of language, layout and format of different electronic communications and how these vary depending on the audience.	- Understand the opportunities computer networks offer for communication.
- Continue to use webcams and /or video conferencing as a class, if appropriate and available, e.g. with external providers, another class or school, or abroad as part of a wider topic.	- Know a range of ways that computer networks can be used for communication.
- Begin to publish their work to a wider audience, e.g. using VLE or podcasting tools.	- Understand that some emails and other forms of electronic communications may be malicious or inappropriate and recognise when an attachment may be unsafe to open.
Example - email	- Recognise the effect that content in their communications may have on others.
- Log on to an email account, open emails, create and send appropriate replies.	- Respect the ideas and communications of others they encounter online.
- Forward an e-mail.	- Discuss the differences between online communication tools used in school and those used internet content, recognising this is possibly not the case on computers used at home at home, e.g., those 'blocked' through the school's filtering.
- Save an e-mail in draft format and then return and edit prior to sending.	
- Attach different files to emails, e.g. text document, sound file or image.	
- Open and save attachments to an appropriate place.	
- Select an email recipient from a class address book.	

Computer Science

Programme of Study

- Work with various forms of input and output.
- Design and create programs that accomplish specific goals.
- Control or simulate physical systems.
- Use logical reasoning to detect and correct errors in programs.

Use sequence, repetition* and selection* in programs (*next to a phrase or word e.g. **repetition** denotes a progression within that concept.)

Skills	Knowledge and Understanding
Programming	**Programming**
- Write programs that accomplish specific goals.	- Understand how to plan and write programs that accomplish specific goals.
- Read what a sequence in a program does.	- Know a range of input devices and how they can be used.
- Work with various forms of input.	- Know a range of output devices and how they can be used.
- Work with various forms of output.	- Know the difference between an input and an output.
- Use logical reasoning to predict outputs.	- Understand that computers can collect data from various inputs.
- Design programs, showing skills needed to plan and implement a task/problem that accomplish specific goals.	- Know what debugging is and how it can be used to achieve specific goals.
- Design programs showing appropriate planning and implementing skills.	- Understand that planning is a vital part of designing programs.
- Create programs that implement algorithms to achieve specific goals.	- Understand that evaluation is a vital part of the design process.
- Debug programs that accomplish specific goals through self and peer assessment.	- Understand what the terms sequence, repetition and selection mean and know how to use them in programs.
- Use sequence, repetition and selection in programs.	- Understand how to control physical devices.
- Plan, test and evaluate programs that solve specific problems using a screen turtle or other programmable devices.	- Be aware that everyday devices use sensors and outputs, e.g. automatic doors, traffic lights, intruder alarms.
- Use sequences of commands to control physical devices using outputs.	- Understand how to use logical reasoning to detect errors in programs.
- Demonstrate and develop a sense of audience when appropriate.	- Understand how to use logical reasoning to correct errors in programs.
- Use and debug programs to control physical devices Note real or screen simulations could be used.	- Understand that computers can collect data from various inputs.
- Use logical reasoning to detect and correct errors in programs.	
Simulations and modelling	**Simulations and modelling**
- Explore the effects of changing variables in models and simulations, asking 'What if?' questions.	- Understand how computer simulations can represent real or imaginary situations and how these can help in the wider world.
- Make and test predictions.	- Understand how computer simulations and spread-sheet models allow changes to be made quickly and easily in comparison with real life situations.
- Use a pre-prepared spreadsheet to record data to answer questions and produce graphs.	- Understand that changes made to one element of a spreadsheet can impact on other calculations
- Use a pre-prepared spreadsheet to explore simple number patterns, e.g. multiples.	
- Change the contents of cells in a pre-prepared spreadsheet and explore the consequences.	

Information Technology

Programme of Study

- 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 search technologies effectively.

Skills	Knowledge and Understanding
Design, create, manage and manipulate digital content	**Design, create, manage and manipulate digital content**
- Select, use and combine internet services to create digital 'content' (inc. programs and systems). - Demonstrate awareness of intended audience in work. - Independently select the most appropriate ICT tools for intended purpose and audience. - Routinely evaluate and improve work as part of the design process. - Use a range of digital devices to produce digital 'content'.	- Understand the importance of content and editing to produce digital content for specific audiences. - Understand that many different devices can be used in isolation and sometimes together to produce digital 'content'. - Understand that you can convert between different formats of files.
Text and images	**Text and images**
- Develop and use criteria to evaluate design and layout of a range of resources including web sites, pages on VLE, online resources and presentations. - Evaluate design and layout of a range of resources including web sites, pages on VLE, online resources and presentations. - Select suitable text, sounds and graphics from other electronic sources, and import into own work. - Create an outline plan for a non-linear presentation; producing a diagram to demonstrate understanding how pages link and the need for clarity. - Develop the use of hyperlinks to produce more effective, interactive, non-linear presentations. - Use of hyperlinks to produce more effective, interactive, non-linear presentations. - Develop consistency across a document - same style of font, colour, body text size, etc. - Make effective use of transitions and animations in presentations. Consider their appropriateness and overall effect on the audience. Independently select, process and import images, video and sounds from a variety of sources to enhance work. - Format and edit work to improve clarity and purpose using a range of tools, e.g. cut and paste, justify, tabs, insert and replace. - Through peer and self assessment, evaluate presentations and make improvements. - Make use of transitions and special effects in video editing software, understanding the effect on the audience. - Export images, presentations and movies in formats appropriate for the purpose and use them in multimedia presentations. - Plan and create a short animated sequence to communicate a specific idea, using a storyboard and timeline. - Design and create a short animated sequence.	- Understand the importance of evaluation and adaptation of individual features to enhance an overall presentation. - Understand the potential of multimedia to inform or persuade and know how to integrate words, images and sounds imaginatively for different audiences and purposes. - Recognise the features of good design in different printed and electronic texts, (e.g. a poster, website, presentation). Talk about design in the context of own work. - Understand that images, sounds and text can be subject to copyright and abide by copyright rules - Know that images (still and moving) can be used to enhance presentations or communicate ideas. - Understand the differences between object based graphics packages and paint packages. - Be aware when it is more appropriate to use an object based graphics package or a paint package. - Discuss and evaluate own and others' images and movies, refining for given audience or task. - Understand that computers can save digital images, graphics and movies in many different file formats and that some are better suited to certain purposes than others. - Understand the need for caution when using the Internet to search for images and what to do if unsuitable images are found. - Know how to take images appropriately and responsibly - Understand the implications of copyright and apply this to work. - Know how to select suitable software tools to accomplish specific goals and tasks

Sound	Sound
▪ Independently select and use a variety of devices to record musical and non-musical sounds. ▪ Independently select, edit, manipulate and combine sound files from a range of sources to create a composition which could be broadcast for a specific purpose and audience, e.g. a soundbyte or podcast. ▪ Upload and download projects to other devices and online space e.g. VLE, blog or website, collaborating and communicating with audiences in locations beyond school. ▪ Create their own sounds and compositions to add to presentations, animations and films. ▪ Use ICT to produce music or sound effects for a specific purpose, considering the impact on the audience, e.g. length, style, genre.	▪ Be aware of different sound file formats, e.g., MP3, WAV; save and use appropriately. ▪ Know when it is appropriate to use sound/music to communicate with an audience.
Data handling	**Data handling**
▪ Construct, refine and interpret bar charts, scatter graphs, line graphs and pie charts. ▪ Discuss how IT enables you to search and sift through large amounts of different types of information and describe the advantages of using the tools ▪ Design questions and perform complex searches using key words, to search a large pre-prepared database looking for relationships and patterns, e.g. data on the Internet; census data. ▪ Check the reliability of the data; identify and correct inaccuracies. ▪ Solve complex enquiries involving selecting, processing and presenting data; drawing conclusions, e.g. is there a relationship between minibeast habitat and diet? ▪ Design a data capture form, e.g. a questionnaire or table to collect information to answer a specific question. ▪ Search data according to more than one criterion. ▪ Present data to a specified audience and display findings in other software, e.g. through presentation software. ▪ Compare different charts and graphs, e.g., in tables, frequency diagrams, pictograms, bar charts, databases or spreadsheets and understand that different ones are used for different purposes. ▪ Select and use the most appropriate method to organise present, analyse and interpret data. ▪ Use a datalogger's settings to log data over a chosen time span (Science) ▪ Use a range of sensors including in a variety of situations in the course of scientific investigations. (Science) ▪ Use a datalogger to make and record accurate measurements or observations and produce graphical information to answer questions and solve simple problems. (Science) ▪ Be able to design experiments which require use of dataloggers, recognising what measurements will be needed, how many repeats and the most appropriate means of recording data. (Science)	▪ Recognise the need for accuracy when designing, entering and interrogating data and how this will affect the quality of information gained. ▪ Recognise the consequences of using inaccurate data and relate to the outside world, e.g. police, doctors, banks, school databases. . ▪ Understand which searches and graph types are relevant to a specific problem and types of information. ▪ Understand that there are different types of data, e.g., numeric, alphabetic, date, alphanumeric, currency. ▪ Understand the importance of presentation techniques aimed at a specific audience. ▪ Understand the need for data protection and some of the rights of individuals over stored data and how it affects use and storage of data in the real world. ▪ Know when to choose dataloggers as the most appropriate tool for capturing data for a particular purpose and explain /justify their choices. (Science) ▪ Appreciate that use of technology can bring added accuracy to results but also that occasional anomalies may need moderation and further investigation. (Science)

Digital research - searching	Digital research - searching
▪ Choose to use the internet when appropriate as a tool for independent research, e.g., gathering text, images, videos and sound as resources to use in their own work. ▪ Use more advanced searching techniques (e.g. Boolean and relational operators). ▪ Choose the most appropriate search engine for a task, e.g., image search, search within a specific site or searching the wider internet. ▪ Be able to create and use folders within lists of book-marks or favourites to organise content. ▪ Apply their knowledge of what to do and who to tell if they discover something inappropriate or offensive on a website, at home and in school.	▪ Know and understand what to do and who to tell if they discover something inappropriate or offensive on a website, at home and in school. ▪ Understand when and where the internet can be used as a research tool. ▪ Understand that you should not publish other peoples' material on the Internet without their permission but you can hyperlink to their websites and acknowledge the source. ▪ Know how Boolean and relational operators can be used in searching. ▪ Understand that good online research involves processing information, and interpreting it for others rather than direct copying

Digital Literacy

Programme of Study

- 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.
- Understand the opportunities computer networks offer for communication and collaboration.

Skills	Knowledge and Understanding
Online safety	**Online safety**
- Locate and respond appropriately to the terms and conditions on websites. - Identify unsuitable posts (e.g. on blogs, a forum …) pertaining to content and conduct. - Identify inappropriate and unacceptable behavior when analysing resources such as videos, text-based scenarios and electronic communications. - Continue to develop the skills to identify risks involved with contact, content and their own conduct whilst online. - Use electronic communication and collaboration tools safely.	- Be aware that file sharing is usually illegal due to copyright laws and can also spread viruses. - Know a range of ways to report concerns about content and contact. - Know what a 'strong' password / understand the importance of keeping personal data secure. - Understand what a digital footprint is. - Know that resources and materials can be covered by copyright and downloading these materials is illegal. - Understand that web users have to observe the terms and conditions of websites. - Understand that electronic communication can be malicious or inappropriate and recognise when an attachment may be unsafe to open. - Understand that social network or other online environments have security settings, which can be altered, to protect the user. - Understand the need to respect privacy of other individuals, e.g., through using bcc function on an email, not uploading/using images or personal information without permission. - Understand the benefits of developing a 'nickname' for online use where appropriate. - Understand they have a right to be protected from inappropriate use of technology by others and the need to respect the rights of other users. - Understand some malicious adults may use various techniques on the Internet to make contact, elicit personal information and 'groom' young children, e.g., fake profiles. - Understand the risks involved in arranging to meet and subsequently meeting anybody from the online world in the offline world. - Know that they should tell a trusted adult immediately if they are asked to meet anybody from the online world in the offline world. - Know how to report any suspicions, e.g., through school's eSafety policies and procedures and the use of CEOP's 'report abuse' button, which links directly to the police. - Recognise that cyber bullying is unacceptable and will be sanctioned according to the school's eSafety policies and procedures /AUP. - Know how to report an incident of cyber bullying if and when it occurs, according to the school's eSafety policies and procedures /AUP. - Understand that they should not publish other peoples' pictures/tag them without permission. - Know that content, e.g., photographs and videos, put online are very difficult to remove - Understand how their own inappropriate conduct can put them at risk whilst online

Electronic communication and collaboration	Electronic communication and collaboration
▪ Independently, and with regard for eSafety, select and use appropriate communication tools to solve problems by collaborating and communicating with others within and beyond school, e.g., email, discussion forums, blogs, wikis, text messages and other digital communication tools. ▪ Make use of webcams and /or video conferencing, if appropriate and available, e.g., to exchange ideas and collaborate on projects with external providers, another class or school, or abroad. ▪ Extend online publishing to a more global audience, e.g. creating and publishing web pages, blog and podcasting. ▪ Evaluate the effectiveness of a variety of digital communication tools for communicating and collaborating. **Example- e-mail** ▪ Add e-mail addresses to a class address book. ▪ Create group or distribution lists of contacts from an address book. ▪ Learn how to use the cc and bcc facilities when sending an e-mail and discuss when these should be used. ▪ Send 'group' e-mails and be aware of the benefits and risks in 'replying to all'.	▪ Understand the potential benefits and risks of digital communication and that methods will vary according to purpose. ▪ Understanding of which tools are better for communicating or collaborating and those that can be used both. ▪ Understand what open-source software is and the conditions of use when using it.
Digital research - search	Digital research - search
▪ Use strategies to verify the accuracy and reliability of information, distinguishing between fact and opinion, e.g. cross checking with different websites or books. ▪ Identify whether a file has copyright restrictions and can be legally downloaded from the internet then used in their own work. ▪ Use appropriate strategies for finding, critically evaluating, validating and verifying information, e.g., using different keywords, skim-reading to check relevance of information, cross checking with different websites or other non ICT resources. ▪ Distinguish between fact and opinion and make informed choices about the sources of online information used to inform their work. ▪ Apply their knowledge of the meaning of domain names and common website extensions, e.g., .co.uk, .com, .ac, .sch .org, .gov, .net, to support the validation process. ▪ Develop skills to question where web content might originate from and understand that this gives clues to its authenticity and reliability, e.g., by looking at web address, author, contact us sections, linked pages. ▪ Use acquired search skills to question where web content might originate from and understand that this gives clues to its authenticity and reliability, e.g., by looking at web address, author, contact us sections, linked pages. ▪ Identify how copyright restrictions can affect how a file can be used in their own work, e.g., those produced under Creative Commons Licensing.	▪ Understand when and where the internet can be used as a research tool. ▪ Understand how search engines work and know that there are different search engines; some to search within sites, and some to search the wider Internet. Be aware that copying text directly from websites or non-digital resources is equivalent to stealing other people's work (plagiarism). ▪ Understand the concept of copyright and how it applies to material they find/download and to their own work. ▪ Understand the concept of plagiarism and the importance of acknowledging and referencing sources. ▪ Understand that you should not publish other peoples' material on the Internet without their permission but you can hyperlink to their websites. o Become aware that file sharing is usually illegal due to copyright laws and can also spread viruses. ▪ o Talk about validity, plausibility and appropriateness of information, especially on the internet. ▪ o Understand some of the potential dangers and impact of not validating information. ▪ Understand that good online research involves processing information, and interpreting it for others rather than direct copying.

Computer Science

Programme of Study

- 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.
- Appreciate how results are selected and ranked.

Skills	Knowledge and Understanding
Programming	**Programming**
- Use repetition* and selection* in programs. - Use variables* in programs. - Design and create programs using decomposition. - Design programs to accomplish specific tasks or goals. - Use logical reasoning to develop systematic strategies that can be used to debug algorithms and programs. - Use procedures in programs.. - Design, test and refine programs to control robots or floor turtles taking account of purpose and needs. - Use programming software to create simulations.	- Know the meaning of the key terms: – selection. – variables. – decomposition. - Know the meaning of logical reasoning. - Understand what a procedure is and why it is important in programs. - Know that programs can be represented in different formats including written and diagrammatic. - Understand the need for precision when creating sequences to ensure reliability. - Understand how experiences of programming / control relate to control systems in the real world. - Understand that there are often different ways to solve the same problem or task - Understand that programming software can create simple and complex simulations.
Simulations and modelling/IT – Data handling	**Simulations and modelling/IT – Data handling**
- Explore the effects of changing variables in models and simulations in order to solve a problem. - Make and test predictions. - Enter formulae into a pre-prepared spreadsheet - explore the effects of changing variables. - Develop simple spreadsheet models to investigate a real life problem. - Create simple spreadsheet models to investigate a real life problem. - Identify and enter the correct formulae into cells. Make predictions of the outcome of changing variables.	- Understand when and where it is appropriate to use a spreadsheet model or a simulation to support an investigation and explain their choices. - Understand that spreadsheets can automate functions, making it easier to test variables, e.g. when planning a budget you can change the number of items and see the changes to total cost. - Understand that spreadsheets can be used to explore mathematical models. - Understand the need for accuracy and frequent checking when entering formulae. - Understand the possible consequences of using inaccurate data or formulae.
	Digital research - search
	- Understand how search engines work and know that there are different search engines; some to search within sites, and some to search the wider Internet. - Understand what 'ranking' is when related to search engines - Understand the importance of keywords and 'linked' pages in the listing/ranking of websites.
	Understand computer networks
	- Understand the difference between the internet and the world wide web. - Understand that the Internet provides many different services. - Know about the key components of a network and how networks work. - Understand what an IP (Internet Protocol) address is.