|  |
| --- |
| **Year 1** |
| **Unit of Work** | * 1. **Technology Around us**

**(Computing systems** **and networks)** | **1.2 Moving a Robot****(Programming)** | * 1. **Digital Writing**

**(Creating Media)** | * 1. **Programming Animations**

**(Programming)** |
| **Prior Learning** | Children have come into contact with examples of technology in their everyday lives. They have interacted with technology in continuous provision.  | Children have experience of giving and following instructions to reach the end of mazes. They also have experience of building and drawing using instructions. | Children have experience of using physical resources to write. They have experience of reading digital writing. | Children have constructed models by creating and following their own basic algorithms. They have ‘tinkered’, tested and engaged in debugging while doing so. |
| **Core Learning** | * Locate examples of technology in the classroom and explain how these technology examples help us.
* Identify a computer and its main parts.
* Use a mouse in different ways.
* Use a keyboard to type on a computer.
* Use the keyboard to edit text.
* Create rules for using technology responsibly
 | * Explain what a given command will do.
* Act out a given word.
* Combine forwards and backwards commands to make a sequence.
* Combine four direction commands to make sequences.
* Can predict the outcome of a sequence involving up to four commands.
* Plan a simple program.
* Find more than one solution to a problem.
 | * Use a computer to write.
* Add and remove text on a computer.
* Use Backspace to remove text.
* Identify that the look of text can be changed on a computer.
* Make careful choices when changing text.
* Explain why I used the tools that I chose.
* Compare typing on a computer to writing on paper.
 | * Choose a command for a given purpose.
* Show that a series of commands can be joined together.
* Identify the effect of changing a value.
* Explain that each sprite has its own instructions.
* Design the parts of a project.
* Use my algorithm to create a program.
 |
| **Vocabulary** | Technology, Computer, Mouse, Trackpad, Keyboard, Screen, Double-click, Typing. | Forwards, Backwards, Turn, Clear, Commands, Instructions, Directions, Plan, Algorithm, Program, Route | Word processor, Typing, Keyboard, Keys, Letters, Type, Numbers, Space, Backspace, Text cursor, Toolbar, Select, Font, Undo, Redo, Format | ScratchJr, Bee-Bot, Command, Sprite, Programming, Programming area, Block, Joining, Start block, Run, Reset, Algorithm, Predict, Effect, Value |
| **Resources** | **Hardware**Laptops | **Software**Paintz | **Hardware**Bee-Bot | **Software** | **Hardware**Laptops | **Software**Microsoft Word | **Hardware**Tablet | **Software**ScratchJr |
| **Application Task** | Create a self-portrait using a painting application that is labelled with a name. | Use knowledge of algorithms to direct a robot through multiple routes in a physical space. | Use a word processing to create a poster that utilises different text types. | Create an animation involving movement of sprites using an animation program. |

|  |
| --- |
| **Year 2** |
| **Unit of Work** | **2.1 Information Technology Around us****(Computing systems** **and networks)** | **2.2 Digital Photography****(Creating Media)** | **2.3 Robot Algorithms****(Programming)** | **2.4 Programming Quizzes****(Programming)** |
| **Prior Learning** | Children are familiar with example of technology around school. They can name parts of a computer. They have experience at using a trackpad, mouse and keyboard. | Children have experience of viewing photographs. Children may have experience of taking photographs using technology at home.  | Children have experience of creating short programs and predicting the outcome of a simple program – (Year 1 Computing) | Children have an understanding of instructions in sequences and the use of logical reasoning to predict outcomes - (Year 1 and Year 2 Computing) |
| **Core Learning** | * Identify examples of computers
* Describe some uses of computers
* Identify examples of IT
* Talk about uses of information technology
* Recognise common types of technology
* List different uses of information technology
* Talk about different rules for using IT
* Use IT for different types of activities
 | * Recognise what devices can be used to take photographs
* Take photos in both landscape and portrait format
* Improve a photograph by retaking it
* Recognise that images can be changed
* Apply a range of photography skills to capture a photo
* Use a tool to achieve a desired effect
* Identify which photos are real and which have been changed
 | * Follow instructions given by others
* Give clear and unambiguous instructions
* Create different algorithms for a range of sequences
* Predict the outcome of a sequence
* Plan algorithms for different parts of a task
* Test and debug parts of a program
* Put together the different parts of a program
 | * Identify the start of a sequence
* Show how to run a program
* Predict and change the outcome of a sequence of commands
* Match two sequences with the same outcome
* Create a program using a given design
* Create a program using an original design
* Improve a project by adding features
* Engage in debugging
 |
| **Vocabulary** | Information technology (IT), Computer, Barcode, Scanner/Scan,  | Device, Camera, Photograph, Capture, Image, Digital, Landscape, Portrait, Framing, Subject, Compose, Light Sources, Background, Editing, Filter, Format, Focus | Instruction, Sequence, Algorithm, Program, Order, Commands, Prediction, Design, Route, Debugging | Sequence, Command, Program, Run, Start, Outcome, Predict, Program, Blocks, Sprite, Project, Modify, Change, Build, Match, Debug, Evaluate |
| **Resources** | **Hardware**Laptops | **Software**Microsoft PowerPoint | **Hardware**Digital CameraLaptopsiPads | **Software** | **Hardware**Bee-Bot | **Software** | **Hardware**iPads | **Software**ScratchJr |
| **Application Task** | Record a positive audio note for others. Paint a digital picture for others. Take a phot that could be safely shared with others. | Take a photo using a piece of digital technology and modify the image using a range of effects and filters. | Design, test and debug a program with multiple parts for a robot to traverse a physical space. | Design an original, interactive quiz using appropriate software. |

|  |
| --- |
| **Year 3** |
| **Unit of Work** | **3.1 Connecting Computers****(Computing systems** **and networks)** | **3.2 Sequencing Sounds****(Programming)** | **3.3 Desktop Publishing****(Creating Media)** | **3.4 Events and Actions in Programs****(Programming)** |
| **Prior Learning** | Children are aware of different types of computers and information technology. They are aware of the potential uses of information technology – (Year 2 Computing) | Children have some prior experience of programming: constructing algorithms for floor robots to follow – (Year 1 and Year 2 Computing) | Children have early experiences of typing. They also have experience of combing text with images – (Year 1 and Year 2 Computing) | Children have some prior experience of programming: constructing algorithms for floor robots to follow – (Year 1 and Year 2 Computing) |
| **Core Learning** | * Explain how digital devices function
* Classify input and output devices
* identify input and output devices
* Recognise similarities and differences between using digital devices and using non-digital tools
* Explain how a computer network can be used to share information
* Recognise the physical components of a network
 | * Identify the objects in a Scratch project
* Explain that objects in Scratch have attributes
* Recognise that commands in Scratch are represented as blocks
* Identify that commands have an outcome
* Create a program following a design
* Build a sequence of commands
* Decide the actions for each sprite in a program
* Implement an algorithm as code
 | * Recognise how text and images convey information
* Change font style, size, and colours
* Edit text
* Explain what ‘page orientation’ means
* Recognise placeholders and say why they are important
* Create a template
* Paste text and images to create a magazine cover
* Identify the uses of desktop publishing in the real world
 | * Explain how a sprite moves in an existing project
* Create a program to move a sprite in four directions
* Use a programming extension
* Adapt a program to a new context
* Choose suitable keys to turn on additional features
* Identify and fix bugs in a program
 |
| **Vocabulary** | Digital device, Input, Process, Output, Program, Digital, Non-digital, Connection, Network, Network switch, Server, Wireless access point, Network cables, Network sockets | Scratch, Programming, Blocks, Commands, Code, Sprite, Motion, Turn, Point in direction, Go to, Glide, Sequence, Code, Run, Order, Note, Chord, Design, Algorithm, Bug, Debug | Text, Images, Communicate, Font, Font style, Template, Landscape, Portrait, Orientation, Placeholder, Layout, Desktop publishing, Copy, Paste | Motion, Event, Sprite, Algorithm, Logic, Move, Resize, Extension Block, Pen up, Set up, Action, Design, Debugging, Errors,  |
| **Resources** | **Hardware**Laptops | **Software**Paintz | **Hardware**Laptops | **Software**Scratch | **Hardware**Laptops | **Software**Adobe Spark | **Hardware**Laptops | **Software**Scratch |
| **Application Task** | Create a map of the school network showing where the devices of the network are located. | Use Scratch to create a playable digital piano. | Use a digital publishing program to create an original magazine cover. | Design and create a maze-based challenge. |

|  |
| --- |
| **Year 4** |
| **Unit of Work** | **4.1 The Internet****(Computing systems** **and networks)** | **4.2 Repetition in Shapes****(Programming)** | **4.3 Photo Editing****(Creating Media)** | **4.4 Repetition in Games****(Programming)** |
| **Prior Learning** | Children are aware that computer networks can be used to share information – (Year 3 Computing) | Children have experience of creating algorithms for robots to follow, (Year 1 and 2 Computing), and of implementing an algorithm as code – (Year 3 Computing) | Children have some experience at taking and editing photographs using different effects – (Year 2 Computing) | Children have previous experience of designing and creating programs that includes count-controlled loops – (Year 4 Computing ‘Repetition in Shapes’) |
| **Core Learning** | * Describe how networks physically connect to other networks
* Recognise how networked devices make up the internet
* Outline how websites can be shared via the World Wide Web
* Create media which can be found on websites
* Recognise how the content of the WWW is created by people
* Explain why some information I find online may not be honest, accurate, or legal.
 | * Program a computer by typing commands
* Create a code snippet
* Write and test an algorithm in a text based language
* Use a count-controlled loop to produce a given outcome
* Predict the outcome of a program containing a count-controlled loop
* Modify a count-controlled loop to produce a given outcome
* Use a procedure in a program
* Design a program that includes count-controlled loops
 | * Identify changes that we can make to an image
* Change the composition of an image by selecting parts of it
* Change images by using a range of effects
* Identify how an image has been retouched
* Choose appropriate tools to retouch an image
* Combine parts of images to create new images
* Sort images into ‘fake’ or ‘real’
* Talk about fake images
 | * Predict the outcome of a snippet of code
* Modify a snippet of code to create a given outcome
* Modify loops to produce a given outcome
* Choose when to use a count-controlled and an infinite loop
* Develop a design that includes two or more loops which run at the same time
* Modify an infinite loop in a given program
* Design a project that includes repetition
* Create and refine a project that includes repetition
 |
| **Vocabulary** | Internet, Network, Router, Network security, Network Switch, Server, Wireless Access Point, Website, Web page, Web address, Browser, Links, Files, Download, Sharing, Ownership, Permission | Program, Turtle, Commands, Code snippet, Algorithm, Debug, Repetition, Count-controlled loop, Value, Trace, Decompose, Procedure | Image, Edit, Arrange, Select, Crop, Copyright, Composition, Pixels, Rotate, Flip, Adjustments, Effects, Hue/Saturation, Sepia, Retouch, Clone, Recolour, Adjust, Sharpen, Brighten, Elements, Border, Layer | Scratch, Programming, Sprite, Blocks, Code, Loop, Repeat, Value, Infinite loop, Count-controlled loop, Animate, Event block, Duplicate, Modify, Design, Repetition, Sprite, Algorithm, Debug, Refine, Evaluate |
| **Resources** | **Hardware**Laptops | **Software**Various Websites | **Hardware**Laptops | **Software**FMSLogo | **Hardware**Laptops | **Software**Paint.NET | **Hardware**Laptops | **Software**Scratch |
| **Application Task** | Search for the ‘Best Mobile Phone Of The Year’ to determine the validity of internet sources. | Plan and program a design for wrapping paper that involves a count-controlled loop. | Create an advert for an imaginary place by editing images to use in the published advertisement. | Create a playable 2-D game using Scratch. |

|  |
| --- |
| **Year 5** |
| **Unit of Work** | **5.1 Systems and Searching****(Computing systems** **and networks)** | **5.2 Flat-file Database****(Data and information)** | **5.3 Introduction to Vector Graphics****(Creating Media)** | **5.4 Selection in Quizzes****(Programming)** |
| **Prior Learning** | Children are aware that networked devices make up the internet and that websites can be shared via the World Wide Web – (Year 4 Computing) | Children have experience of gathering and presenting information and data – (various topics of work in subjects such as Maths and Science) | Children have created digital paintings – (Year 1 Computing). Children have used images in desktop publishing – (Year 3 Computing) | Children have experience with Scratch and understand the concepts of ‘sequence’ and ‘repetition’ – (Year 5 Computing: ‘Selection in Physical Computing) |
| **Core Learning** | * Explain that computers can be connected together to form systems
* Recognise the role of computer systems in our lives
* Recognise that data is transferred using agreed methods
* Explain that networked digital devices have unique addresses
* Explain that data is transferred over networks in packets
* Send information over the internet in different ways
* Explain that the internet allows different media to be shared
* Compare working online with working offline
* Recognise that working together on the internet can be public or private
 | * Create multiple questions about the same field
* Navigate a flat-file database to compare different views of information
* Explain what a ‘field’ and a ‘record’ is in a database
* Choose which field to sort data by to answer a given question
* Group information to answer questions
* Choose which field and value are required to answer a given question
* Outline how ‘AND’ and ‘OR’ can be used to refine data selection
* Select an appropriate chart to visually compare data
* Refine a chart by selecting a particular filter
* Refine a search in a real-world context
 | * Recognise that vector drawings are made using shapes
* Identify the main drawing tools
* Move, resize, and rotate duplicated objects
* Create a vector drawing by combining shapes
* Use the zoom tool to add detail to drawings
* Modify objects to create different effects
* Change the order of layers in a vector drawing
* Copy part of a drawing by duplicating several objects
* Group to create a single object
* Suggest improvements to a vector drawing
 | * Identify and modify conditions in a program
* Use selection in an infinite loop to check a condition
* Identify the condition and outcomes in an ‘if… then… else…’ statement
* Create a program with different outcomes using selection
* Design the flow of a program which contains ‘if… then… else…’
* Identify the outcome of user input in an algorithm
* Test a program and share it with others
* Identify ways a program could be improved
* Identify the setup code I need in a program
 |
| **Vocabulary** | System, Connection, Digital, Input, Process, Output, Protocol, Address, Packet, Chat, Explore, Slide deck, Reuse, Remix, Collaboration | Database, Data, Information, Record, Field, Sort, Order, Group, Search, Value, Criteria, Graph, Chart, Axis, Compare, Filter, Presentation | Vector, Drawing tools, Shapes, Icons, Toolbar, Move, Resize, Colour, Rotate, Duplicate/Copy, Zoom, Select, Rotate, Alignment grid, Handles, Modify, Layers, Order, Group, Ungroup, Vector drawing | Selection, Condition, Count-controlled loop, Outcomes, Conditional statement, Algorithm, Program, Debug, Question, Answer, Input, Test, Implement, Run, Setup, Evaluate |
| **Resources** | **Hardware**Laptops | **Software**Google Slides | **Hardware**Laptops | **Software**j2database | **Hardware**Laptops | **Software**Google Drawings | **Hardware**Laptops | **Software**Scratch |
| **Application Task** | Work collaboratively to create a shared bank of information using computers. Use this to create a guide for looking after an animal.  | Use a ‘real-world’ database to search for air travel flights that meet specific criteria. Idnetify a preferred flight and explain why it is preferred. | Use vector drawing skills to create an icon that could be used in a piece of desktop publishing. | Design an original quiz and implement it as a program. |

|  |
| --- |
| **Year 6** |
| **Unit of Work** | **6.1 Communication and Collaboration****(Computing systems** **and networks)** | **6.2** **Web Page Creation****(Creating Media)** | **6.3 Variables in Games****(Programming)** | **6.4 Introduction to Spreadsheets****(Data and information)** |
| **Prior Learning** | Children have an understanding of The Internet and how data is transferred. They have experience of working collaboratively using the internet – (Year 5 Computing) | Children have experience of: digital writing, digital painting and vector drawing – (Various Units of Work) They have some awareness of how web pages are generally set out – (Various Units of Work) | Children have experience with Scratch. They are aware of the programming constructs of sequence, repetition, and selection – (Year 5 Computing) | Children have experience of examining, interpreting, collecting and organising digital data – (Year 5 Computing and various topics of work in subjects such as Maths and Science) |
| **Core Learning** | * Complete a web search to find specific information
* Compare results from different search engines
* Describe how search engines select results
* Explain that search results are ordered
* Explain that a search engine follows rules to rank relevant pages
* Describe some of the ways that search results can be influenced
* Explain how search engines make money
* Identify that there are a variety of ways of communicating over the internet
* Choose methods of communication to suit particular purposes
* Compare different methods of communicating on the internet
* Explain that communication on the internet may not be private
 | * Explore Websites and discuss different types of media on them
* Know that websites are written in HTML
* Recognise the common features of a web page
* Plan the features of a web page
* Say why copyright-free images should be used in web design
* Find copyright-free images
* Describe what is meant by the term ‘fair use’
* Add content to an original web page
* Recognise the need to preview pages
* Explain what a navigation path is
* Make multiple web pages and link them using hyperlinks
* Create hyperlinks to link to other people's work
 | * Identify examples of information that is variable
* Identify that variables can hold numbers or letters
* Explain that a variable has a name and a value
* Recognise that the value of a variable can be changed
* Decide where in a program to change a variable
* Make use of an event in a program to set a variable
* Design a project that builds on a given example
* Create the artwork for a project
* Test the code that has been written
* Identify ways that a game could be improved
* Extend a game further using more variables
 | * Explain the relevance of data headings
* Answer questions from an existing data set
* Explain what an item of data is
* Apply an appropriate number format to a cell
* Build a data set in a spreadsheet application
* Construct a formula in a spreadsheet
* Identify that changing inputs changes outputs
* Recognise that data can be calculated using different operations
* Create a formula which includes a range of cells
* Apply a formula to multiple cells by duplicating it
* Use a spreadsheet to answer questions
* Apply a formula to calculate data
* Produce a graph to show the answer to questions
 |
| **Vocabulary** | Search engine, Google, Bing, Yahoo!, Swisscows, DuckDuckGo, Refine, Index, Crawler, Bot, Ranking, Optimisation, Links, Content creator, Selection, Communication, Internet, Public, Private, One-way, Two-way, One-to-one, One-to-many, SMS, Email,  | Website, Web page, Browser, Media, Hypertext Markup Language (HTML), Logo, Layout, Header, Media, Copyright, Fair use, Home page, Preview, Evaluate, Device, Google Sites, Breadcrumb trail, Navigation, Hyperlink, Subpage, External link, Embed | Variable, Change, Name, Value, Set, Design, Event, Algorithm, Code, Task, Artwork, Project, Debug, Improve, Evaluate, Share | Spreadsheet, Data, Data heading, Data set, Cells, Object, Spreadsheet application, Format, Common attribute, Formula, Calculation, Input, Output, Cell reference, Operation, Range, Duplicate, Sigma, Propose, Question, Graph, Chart, Evaluate, Results, Comparison, Software, Tools |
| **Resources** | **Hardware**Laptops | **Software** | **Hardware**Laptops | **Software**Google Sites | **Hardware**Laptops | **Software**Scratch | **Hardware**Laptops | **Software**Microsoft Excel |
| **Application Task** | Suggest appropriate modes of Internet communication for a range of specific purposes. | Design, create and test an original website based around animals. | Design, code and create a playable game, including creating original artwork. | Use a spreadsheet to calculate the cost when planning a party for the class. |