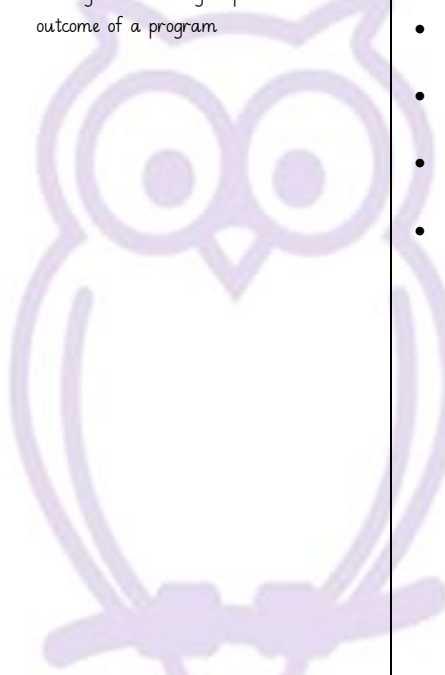




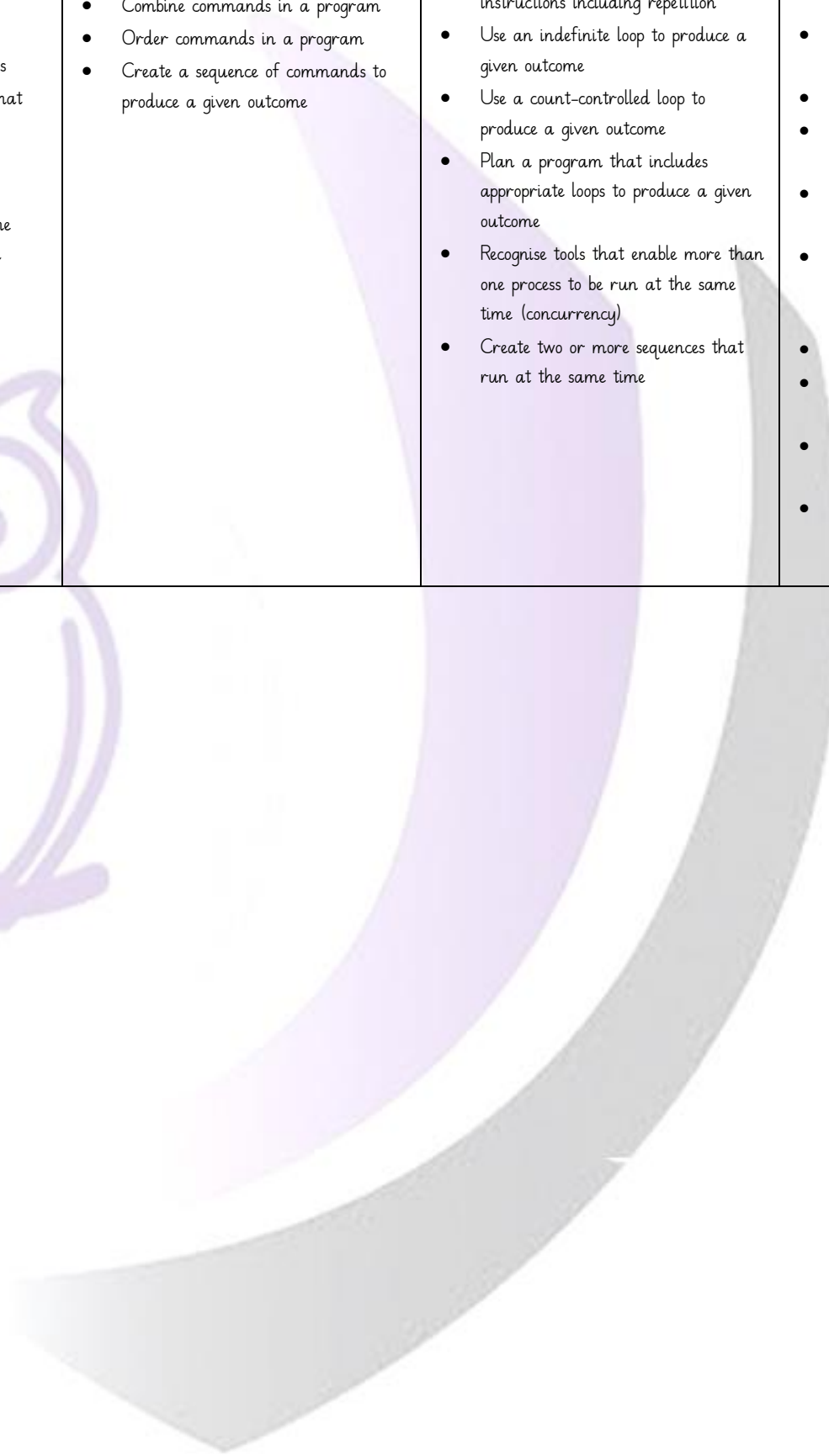
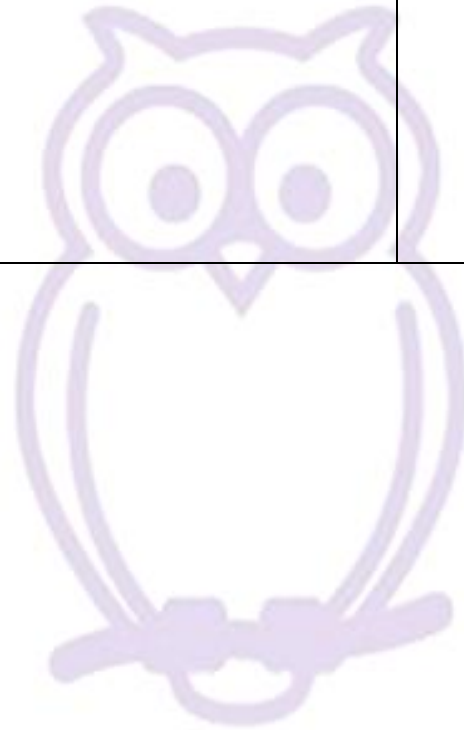
# NEWARK HILL ACADEMY

## Computing

### Computer Science (Coding)

| Knowledge   |  |   |  |  |   |  |
|---|--|---|--|--|---|--|
| EYFS  | Year 1   | Year 2  | Year 3   | Year 4   | Year 5  | Year 6   |
| <ul style="list-style-type: none"> <li>Understand that they can control the programmable toy</li> </ul> | <ul style="list-style-type: none"> <li>Enact a given word and recall words that can be enacted</li> <li>Predict the outcome of a command on a device</li> <li>List which commands can be used on a given device</li> <li>Recognise how to run a command (press a button)</li> <li>Explain what a given command does</li> <li>Match a command to an outcome</li> <li>Choose a command for a given purpose</li> <li>Understand that a program is a set of commands a computer can run</li> <li>Recall that a series of instructions can be issued before they are enacted</li> <li>Build a sequence of commands in steps</li> <li>Combine commands in a program</li> </ul> | <ul style="list-style-type: none"> <li>Describe that a series of instructions is a sequence</li> <li>Recall that a series of instructions can be issued before they are enacted</li> <li>Use logical reasoning to predict the outcome of a program</li> </ul>  | <ul style="list-style-type: none"> <li>Explain that programs start because of an input</li> <li>Explain what a sequence is</li> <li>Identify that a program includes sequences of commands</li> <li>Identify that the sequence of a program is a process</li> <li>Explain that the order of commands can affect a programs output</li> <li>Identify that different sequences can achieve the same output</li> <li>Identify that different sequences can achieve different outputs</li> </ul> | <ul style="list-style-type: none"> <li>Explain what repeat means</li> <li>Identify everyday tasks that include repetition as part of a sequence e.g., brushing teeth dance moves</li> <li>Explain that we can use a loop command in a program to repeat instructions</li> <li>Identify patterns in a sequence</li> <li>Identify a loop within a program</li> <li>Explain that in programming there are indefinite loops and count controlled loops</li> <li>Explain that an indefinite loop will run until the program is stopped</li> <li>Explain that you can program a loop to stop after a specific number of times</li> <li>Identify patterns in a sequence e.g., step three times means the same as step, step, step</li> <li>Identify when to use a loop and when not to</li> <li>Explain the importance of instruction order in a loop</li> <li>Recognise that not all tools enable more than one process to be run at once</li> </ul> | <ul style="list-style-type: none"> <li>Explain that condition can only be true or false</li> <li>Relate that count-controlled loop contains a condition</li> <li>Compare count-controlled loop with a condition-controlled loop</li> <li>Explain that condition-controlled loop will stop when a condition is met</li> <li>Explain that when a condition is met a loop will complete a cycle before it stops</li> <li>Explain that selection can be used to branch the flow of a program</li> <li>Explain that a loop can be used to repeatedly check whether the condition has been met</li> <li>Explain the importance of instruction order in 'if...then...else' statements</li> <li>Define that conditional statements are used in computer programs</li> <li>Relate that a conditional statement connects a condition to an outcome</li> <li>Explain the instructions in a program would produce specific outcomes</li> <li>Relate that a count-controlled loop contains a condition</li> <li>Explain that a loop can stop when a condition is met for example number of times</li> <li>Explain a sequence within a count-controlled or event-controlled loop</li> <li>Explain that a loop can stop when a condition is met for example an event</li> <li>Explain that program flow can branch according to a condition</li> <li>Explain the importance of instruction, order in if then statements</li> <li>Conclude that a loop can be used to repeatedly check weather condition has been met</li> <li>Explain the importance of instruction, order in if then else statements</li> </ul> | <ul style="list-style-type: none"> <li>Define 'variable' as something that is changeable</li> <li>Identify examples of information that is variable for example a football score during a match</li> <li>Explain that a variable is something that we can use in a program for example 'score'</li> <li>Define a program variable as a placeholder in memory for a single value</li> <li>Explain in a variable has a name and a value</li> <li>Recognise that the value of a variable can be used in a program</li> <li>Recognise that the value of a variable can be updated</li> <li>Define the way that a variable is changed</li> <li>Recognise that a variable can be set as a constant (fixed value)</li> <li>Identify that variables can hold numbers (integers) or letters (strings)</li> <li>Explain the importance of setting a variable at the start of a program (initialisation)</li> <li>Explain that there is only one value for a variable at any one time</li> <li>Explain that if you change the value of the variable you cannot access the previous value (cannot undo)</li> <li>Explain that if you read a variable the value remains</li> <li>Explain that the name of a variable is meaningless to the computer</li> <li>Explain the name available needs to be unique</li> </ul> |


| Skills   |  |  |  |   |   |  |
|--|--|--|--|---|---|--|
| EYFS   | Year 1   | Year 2   | Year 3   | Year 4  | Year 5  | Year 6   |
| <ul style="list-style-type: none"> <li>Follow simple instructions</li> <li>Use simple instructions</li> <li>Program a toy (e.g. Bee-Bot) using basic commands</li> </ul> | <ul style="list-style-type: none"> <li>Choose a series of words that can be enacted as a program</li> <li>Choose a series of commands that can be run as a program</li> <li>Run a program on a device</li> </ul> | <ul style="list-style-type: none"> <li>Choose a series of words that can be enacted as a sequence</li> <li>Explain what happens when we change the order of instructions</li> <li>Choose a series of commands that can be run as a program</li> <li>Trace a sequence to make a prediction</li> <li>Test a prediction by running the sequence to create and debug a program that I have written</li> <li>Run a program on a device</li> </ul> | <ul style="list-style-type: none"> <li>Build a sequence of commands</li> <li>Combine commands in a program</li> <li>Order commands in a program</li> <li>Create a sequence of commands to produce a given outcome</li> </ul> | <ul style="list-style-type: none"> <li>List an everyday task as a set of instructions including repetition</li> <li>Use an indefinite loop to produce a given outcome</li> <li>Use a count-controlled loop to produce a given outcome</li> <li>Plan a program that includes appropriate loops to produce a given outcome</li> <li>Recognise tools that enable more than one process to be run at the same time (concurrency)</li> <li>Create two or more sequences that run at the same time</li> </ul> | <ul style="list-style-type: none"> <li>Modify a count-controlled or event-controlled loop</li> <li>Create a count-controlled or event-controlled loop</li> <li>Create a condition-controlled loop</li> <li>Use a condition in an 'if...then' statement to start an action</li> <li>Use selection to switch the program flow in one of two ways</li> <li>Use a condition in an 'if...then...else' statement to produce given outcomes</li> <li>Experiment with a repeat-until loop</li> <li>Use a condition in an 'if.....' statement to produce a given outcome</li> <li>Show that a condition can switch program flow in one of two ways</li> <li>Use a condition in an 'if...then...else...' statement to produce given outcomes</li> </ul> | <ul style="list-style-type: none"> <li>Identify a variable in an existing program</li> <li>Experiment with the value of an existing variable</li> <li>Choose a name that identifies the role of a variable to make it more usable (to humans)</li> <li>Decide where in a program to set a variable</li> <li>Update a variable with the user input</li> <li>Use an event in a program to update a variable</li> <li>Use a variable in a conditional statement to control the flow of a program</li> <li>Use the same variable in more than one location in a program</li> </ul> |



## Computing Systems

### Knowledge

| EYFS  | Year 1   | Year 2  | Year 3   | Year 4  | Year 5  | Year 6  |
|---|--|---|--|---|---|---|
| <ul style="list-style-type: none"> <li>• Talk about how to use the internet as a way of finding information online.</li> <li>• Identify devices They could use to access information on the internet</li> <li>• Identify ways that they can put information on the internet.</li> <li>• Recognise ways in which the internet can be used to communicate.</li> <li>• Give examples of how to use technology to communicate with people they know.</li> </ul> | <ul style="list-style-type: none"> <li>• Explain that technology is something that can help us</li> <li>• Identify examples of technology</li> <li>• Explain how examples of technology help us</li> <li>• Recognise that a computer is an example of technology</li> <li>• Recognise that choices are made when using technology</li> <li>• Explain why rules are needed when using technology</li> </ul> | <ul style="list-style-type: none"> <li>• Recognise different types of computers used in school</li> <li>• Identify that the computer is a part of information technology</li> <li>• Recognise the features of information technology</li> <li>• Talk about uses of information technology</li> <li>• Say how rules for using information technology can help us</li> <li>• Explain how information technology benefits us</li> <li>• Recognise that choices are made when using information technology</li> <li>• Recognise the information on the computer can be stored</li> <li>• Explain the information on a computer can be saved</li> <li>• Explain it stored information can be retrieved edited and re-saved</li> <li>• Recognise that my work can be shared between devices</li> <li>• Recognise that my work can be printed and shared</li> <li>• Recognise that people around me can view my screen to see my work</li> </ul> | <ul style="list-style-type: none"> <li>• Describe what an input is</li> <li>• Explain the process acts on the inputs</li> <li>• Explain that an output is produced by the process</li> <li>• Explain how computer systems can change the way that we work</li> <li>• Identify how changing the process can affect the output</li> <li>• Recognise that a digital device is made up of several parts</li> <li>• Recognise that computers can be connected to each other</li> <li>• Identify how devices in a network are connected with one another</li> <li>• Recognise that a network is made up of a number of components</li> <li>• Explain how information is passed through multiple connections</li> <li>• Identify the benefits of computer networks</li> </ul> | <ul style="list-style-type: none"> <li>• Describe how networks connect to other networks</li> <li>• Outline how information can be shared by the worldwide web</li> <li>• Describe how to access the worldwide web</li> <li>• Describe the types of content media that can be added created and shared on the worldwide web</li> <li>• Explain how the content of the worldwide web is created owned and shared by people</li> <li>• Describe the current limitations of the worldwide web media</li> <li>• Evaluate the reliability of content and consequences of unreliable content</li> <li>• Explain the benefits of the world wide web</li> <li>• Recognise that the worldwide web is part of the Internet</li> <li>• Explain that the global interconnection of networks is the Internet</li> <li>• Recognise the need for security on the Internet</li> </ul> | <ul style="list-style-type: none"> <li>• Recognise that computers can be part of a system in an electronic device</li> <li>• Understand that computers can be connected together to form systems</li> <li>• See that computers communicate with other devices including other computers</li> <li>• Recognise input, process and output in large computer systems</li> <li>• Recognise the role of computer systems in our lives</li> <li>• Recognise how information is transferred across the Internet</li> <li>• Recognise that data is transferred using agreed protocols (methods)</li> <li>• Explain that data is transferred in packets</li> <li>• Recognise that connections between computers allow us to access shared stored files</li> <li>• Recognise that connections between computers allow us to work together</li> <li>• Evaluate different ways of working together</li> <li>• Explain that the Internet lets people in different places work together</li> <li>• Recognise that Internet collaborations can be public or private</li> <li>• Explain that the Internet allows different media to be shared</li> </ul> | <ul style="list-style-type: none"> <li>• Recognise that there are a number of search engines</li> <li>• Explain why search engines exist</li> <li>• Define the purpose of an index</li> <li>• Explain why search engines create indexes and that they are different for each search engine</li> <li>• Explain the role of web crawlers</li> <li>• Explain how search engines are selected</li> <li>• Explain that ranking narrows down the search results returned from the index which makes it more useful</li> <li>• Explain that search results are ordered, and this is known as ranking</li> <li>• Explain how ranking is determined by rules and that different search engines use different rules</li> <li>• Examine the role of the searcher search engine and context creator in the searching process</li> <li>• Explain why the order of results is important and to whom</li> <li>• Identify some of the limitations of search engines</li> <li>• Recognise that some information is not searchable</li> <li>• Explain how search engines make money by selling advertising space</li> <li>• Define communication</li> <li>• Discuss the opportunities that technology offers for communication</li> </ul> |

| Skills  |  |  |   |   |   |  |
|---|--|--|---|---|---|--|
| EYFS  | Year 1   | Year 2   | Year 3  | Year 4  | Year 5  | Year 6   |
| <ul style="list-style-type: none"> <li>•</li> </ul> | <ul style="list-style-type: none"> <li>• Choose a piece of technology to do a job</li> <li>• Recognise that some technology can be used in different ways</li> <li>• Identify the main parts of a computer</li> <li>• Use a mouse in different ways</li> <li>• Use a keyboard to type</li> <li>• Use the keyboard to edit text</li> <li>• Show how to use technology safely</li> </ul> | <ul style="list-style-type: none"> <li>• describe some uses of computers</li> <li>• identify information technology in school</li> <li>• identify information technology beyond school</li> <li>• show how to use information technology safely</li> </ul>  | <ul style="list-style-type: none"> <li>• Identify input and output devices</li> <li>• Explain that a computer system accepts the input and process it to produce an output</li> <li>• Explain how a computer network can be used to share information</li> <li>• Explain the role of a switch server and wireless access point in a network</li> <li>• Identify network devices around me</li> <li>• Explain how networks can be connected to other networks</li> </ul> | <ul style="list-style-type: none"> <li>•</li> </ul> | <ul style="list-style-type: none"> <li>•</li> </ul> | <ul style="list-style-type: none"> <li>• Recall how to use a search engine</li> <li>• Compare the results from different search engines</li> <li>• Demonstrate that different search terms produce different results</li> <li>• Explain that search terms need to be chosen carefully</li> <li>• Evaluate the results of search terms</li> <li>• Identify different ways to communicate without technology</li> <li>• Use methods of communicating using the internet</li> <li>• Choose an appropriate method of internet communication for a given purpose</li> <li>• Evaluate different methods of online communication</li> <li>• Explain which types of media can be shared through the internet</li> <li>• Explain that communicating through the internet can be public or private</li> <li>• Decide what i should and should not share</li> <li>• Classify internet communication by messenger and recipient or audience</li> </ul> |



## Creating Media

### Knowledge

| EYFS  | Year 1  | Year 2  | Year 3  | Year 4   | Year 5   | Year 6   |
|---|---|---|---|--|--|--|
| <ul style="list-style-type: none"> <li>• Know that work they create belongs to them.</li> <li>• Name own work so that others know it belongs to them.</li> <li>• Know that pressing buttons or manipulating a mouse causes something to happen</li> <li>• Recognise when a device is touchscreen</li> </ul> | <ul style="list-style-type: none"> <li>• Recognise that tools can be changed to produce different outcomes</li> <li>• Choose options to achieve a desired effect</li> <li>• Consider impact or choices made</li> <li>• Recognise that information on a computer can be stored</li> <li>• Explain that information on a computer can be saved</li> <li>• Explain that stored information can be retrieved edited re-saved</li> <li>• Recognise that my work can be shared between devices</li> <li>• Recognise that my work can be printed and shared</li> <li>• Recognise that people around me can view my screen to see my work</li> <li>• Recognise that keyboard is used to enter text into a computer</li> <li>• Recognise that the shift key changes the output of a key</li> <li>• Recognise that text can be changed</li> <li>• Recognise that text can be edited</li> <li>• Recognise that appearance of text can be changed</li> <li>• Consider the impact of choices made</li> </ul> | <ul style="list-style-type: none"> <li>• Recognise that some digital devices can capture images using a camera</li> <li>• Recognise that people around me can view my screen to see my photos</li> <li>• Explain that photos can be saved</li> <li>• Recognise that a photograph is composed by the photographer</li> <li>• Recognise when to choose a landscape or portrait photograph</li> <li>• Recognise that photographs can be changed through editing</li> <li>• Recognise the features of a good photograph</li> <li>• Choose an image that could be improved by editing</li> <li>• Explain that photos can be retrieved edited and re-saved to identify that some images are not real/fake</li> <li>• Consider the results of choices I have made</li> <li>• Use a computer to create a piece of music</li> <li>• Listen to music</li> <li>• Say how music can make us think and feel</li> <li>• Recognise that music is made by humans</li> <li>• Describe how music can be used in different ways</li> <li>• Identify that there are patterns in music</li> <li>• Show how music is made from a series of notes</li> <li>• Create music for a purpose</li> <li>• Consider how different musical sequences create different effects</li> <li>• Review and refine our computer work</li> </ul> | <ul style="list-style-type: none"> <li>• Recognise that an animation is made up of a sequence of images</li> <li>• Recognise that an animation can be drawn images or captured photographs</li> <li>• Recognise the relationship between frames and motion</li> <li>• Understand the terms 'composition', 'stage' and 'capture area'</li> <li>• Decompose a known story into characters stages and key events</li> <li>• Recognise the need for consistency in working</li> <li>• Recognise that a capturing device needs to be in a fixed position</li> <li>• know how to fix mistakes in captured images</li> <li>• Recognise the impact of adding other media</li> <li>• Recognise how text and images can be used together to convey information</li> <li>• Define landscape and portrait as two different page orientations</li> <li>• Consider how different layouts can suit different</li> <li>• Recognise purposes</li> <li>• Consider the benefits of using DTP (Desktop Publisher) application</li> <li>• Recognise that DTP pages can be structured with place holders</li> </ul> | <ul style="list-style-type: none"> <li>• Recognise that sound can be digitally recorded</li> <li>• Recognise that some digital devices have microphones</li> <li>• Recognise that recorded audio is stored as a file</li> <li>• Recognise audio can be edited and altered</li> <li>• Recognise that sound can be layered</li> <li>• Consider the results of editing choices made</li> <li>• Recognise that digital images can be manipulated</li> <li>• Recognise the images can be changed for different purposes</li> <li>• Use the most appropriate tool for a particular purpose</li> <li>• Recognise that not all images are real</li> <li>• Consider the impact of changes made on the quality of the image</li> </ul> | <ul style="list-style-type: none"> <li>• Recognise that tools can be changed to produce different outcomes</li> <li>• Choose options to achieve a different effect</li> <li>• Recognise an image comprises of separate objects</li> <li>• Recognise objects are layered</li> <li>• Combine options to achieve a desired effect</li> <li>• Consider the impact of choices made</li> <li>• Recognise the objects can be modified in groups</li> <li>• Recognise that vector images can be scaled without impact quality</li> <li>• Recognise video as moving pictures that can be combined with audio</li> <li>• Identify the key concepts of composition</li> <li>• Recognise that some digital devices can capture video using a camera</li> <li>• Recognise that video can be captured by a person operating a camera</li> <li>• Recognise that video can be captured automatically for example a wildlife camera</li> <li>• Identify the features of a good video</li> <li>• Identify how a video can be improved</li> <li>• Recognise that video can be improved through editing</li> <li>• Consider the results of choices made</li> </ul> | <ul style="list-style-type: none"> <li>• Recognise that 3D objects comprise length width and height (depth)</li> <li>• Recognise the difference when working in 3D Compared with 2D</li> <li>• Recognise that structures can be broken down into a collection of 3D objects</li> <li>• Recognise the similarities and differences between real life 3D and virtual 3D</li> <li>• Recognise relationship between HTML and visual display</li> <li>• Recognise that web pages can contain different media types</li> <li>• Recognise that web pages are written by people</li> <li>• Recognise that a website is a set of hyperlinked web pages</li> <li>• Recognise components of a web page layout</li> <li>• Consider the ownership and use of images (copyright)</li> <li>• Recognise the need to preview pages (different screens/devices)</li> <li>• Recognise the need for a navigation path</li> <li>• Recognise the implications of linking to content owned by others</li> </ul> |

| Skills   |   |   |  |  |   |   |
|--|---|---|--|--|---|---|
| EYFS   | Year 1  | Year 2  | Year 3   | Year 4   | Year 5  | Year 6  |
| <ul style="list-style-type: none"> <li>• Use age appropriate software to create art</li> <li>• Use video app to record videos</li> </ul> | <ul style="list-style-type: none"> <li>•</li> </ul> | <ul style="list-style-type: none"> <li>• Digitally make marks on a computer screen</li> <li>• Use the brush tool</li> <li>• Change brush colour and size</li> <li>• Use tools to draw shapes</li> <li>• Change fill colour in a shape</li> <li>• Use tools to draw lines</li> <li>• Change line size and colour</li> <li>• Use the fill tool to change colours</li> <li>• Use the undo button to correct a mistake</li> <li>• Use letter, number and space keys to enter text into a computer</li> <li>• Use punctuation and special characters</li> <li>• Select text</li> <li>• Choose options to achieve a desired effect</li> <li>• Change the appearance of text on a computer</li> <li>• Use the backspace key to remove text</li> <li>• Position the text cursor in a chosen location</li> <li>• Use undo</li> </ul> | <ul style="list-style-type: none"> <li>• Use a computer to create animation tell a story</li> <li>• Set up a device to capture the stock frame photos</li> <li>• Capture a series of images</li> <li>• Move a subject between catches</li> <li>• Use tools such as onion skinning to review subject position</li> <li>• Play a sequence of images back to review</li> <li>• Remove images to improve animation</li> <li>• Add sound effects</li> <li>• Add text scenes credits captions</li> <li>• Playback and review a film</li> <li>• Export film</li> <li>• Show that page orientation can be changed</li> <li>• Add text to a placeholder</li> <li>• Organise text and image place holders in a page layout</li> <li>• Add and remove images to and from place holders</li> <li>• Edit text in a placeholder to choose fonts and apply effects to text</li> <li>• Move resize and rotate images</li> <li>• Review a document</li> </ul> | <ul style="list-style-type: none"> <li>• Record sound</li> <li>• Know where the microphone is on a device</li> <li>• Press buttons to start recording</li> <li>• Press buttons to stop recording</li> <li>• Locate recorded audio</li> <li>• Playback audio</li> <li>• Select a selection of audio</li> <li>• Apply effects to a selection of audio</li> <li>• Delete a selection of audio</li> <li>• Save export an audio file</li> <li>• Use a computer to further manipulate images</li> <li>• Open/retrieve an image</li> <li>• Change the composition of an image, rotate flip crop</li> <li>• Apply a change globally adjust colours, apply filters add effects</li> <li>• Apply changes locally retouch reuse</li> <li>• Make additions draw, add text, add an element e.g. A border</li> </ul> | <ul style="list-style-type: none"> <li>• Create graphical objects on a computer screen</li> <li>• Add or remove objects</li> <li>• Select a shape type to add to a drawing</li> <li>• Select a line type to add to a drawing</li> <li>• Add text to a drawing</li> <li>• Drag out an object on the page</li> <li>• Select an object</li> <li>• Duplicate an object</li> <li>• Delete an object</li> <li>• Modify an object reposition, rotate, resize, alter proportions and re-colour</li> <li>• Select multiple objects</li> <li>• Combine objects</li> <li>• Group objects</li> <li>• Modify multiple objects</li> <li>• Change the layers of an object</li> <li>• Use a recording device add a computer to make a video</li> <li>• Hold the device safely in landscape orientation</li> <li>• Locate the function on the device to record the video</li> <li>• Pan left and right or tilt up and down</li> <li>• Focus zoom and compose</li> <li>• Use techniques to create specific effects</li> <li>• Press the start stop button to end recording</li> <li>• Playback video by locating the video captured on a device and using the playback video option</li> <li>• Edit the video by selecting a section of the video</li> <li>• Apply effects in a selection of video</li> <li>• Delete a section of video</li> <li>• Split a section of video</li> <li>• Crop a section of video</li> <li>• Save an export to video file</li> </ul> | <ul style="list-style-type: none"> <li>• Create three graphical objects on a computer screen</li> <li>• Alter the view of the 3d space</li> <li>• Place a 3d object in 3d space</li> <li>• Select, duplicate and delete an object</li> <li>• Reposition objects in three dimensions</li> <li>• Rotate objects in three dimensions</li> <li>• Resize an object in three dimensions</li> <li>• Recolouring object</li> <li>• Using object as a placeholder</li> <li>• Select, group and modify multiple objects</li> <li>• Recognise that blank objects must be used as place holders to create holes</li> <li>• Recognise the role of scale in design</li> <li>• Review an existing website (navigation bars header)</li> <li>• Create a new blank web page</li> <li>• Add text to a web page</li> <li>• Set the style of text on a web page</li> <li>• Change the appearance of text</li> <li>• Preview a web page (different screen sizes)</li> <li>• Embed media in a web page</li> <li>• Add web pages to a website</li> <li>• Insert hyperlinks between pages</li> <li>• Insert hyperlinks to another site</li> </ul> |