HOLLY PRIMARY SCHOOL

Happiness Pride Commitment

Computing

Progression of Knowledge

Key substantive and disciplinary knowledge to be taught in each year group.

Holly Primary School

Head8@holly.notts.sch.uk

Digital Safety

1) Self Image & Identity
2) Online Relationships
3) Copyright & Ownership
4) Online Reputation
5) Privacy & Security
6) Managing Online Information
7) Online Bullying
8) Health, Well Being & Lifestyle

DIGITAL LITERACY: Self-Image & Identity – Know the difference between online and offline identity, know how to report. Know that online technologies affect self-image and behaviour.

Subtantive Knowledge

EYFS	One	Two	Three	Four	Five	Six
Know that there is difference between offline & online. Know that I can say No/Stop/I'll Tell/I'll ask to someone who makes me feel upset.	Know there are people they might not know, online.	Know that people can act differently offline and online. Know that there are ways people can get help.	Know that people might change their identity depending on what they do online.	Know that people, including my friends, may pretend online.	Know that Online identities can be copied, modified, or altered.	Know that online representations should be challenged.

Disciplinary Knowledge

One	Two	Three	Four	Five	Six
Know there may be people online who can make someone feel upset. Know examples of how and when I can talk to a trusted adult to help me.	Know how some issues online can make people upset. Know how people can get help by talking to adults.	Know how to explain what 'Identity' means. Know how people can represent themselves in different ways online.	Know there are differences in my online and offline identity. Know how to interact positively online. Know how my positive online behaviour affects how people perceive me. Know reasons why my friends might change their identity online.	Know how to make responsible choices about my online identity (depending on context) Know how to report online.	Know how to identify and evaluate online content concerning gender, race, religion, disability, culture and other groups. Know why it is important to challenge and reject inappropriate online representations. Know how to get help online and offline. Know that I keep asking until I get help.

DIGITAL LITERACY: Online Relationships – Know that technology can shape communication. Know that online relationships can be positive and negative.

Substantive Knowledge

EYFS	One	Two	Three	Four	Five	Six
Know that the internet / online can be used to communicate.	Know that I should ask permission before going online. Know that there are different ways people can communicate online.	Know that I should ask permission before sharing information online. Know that Strangers could communicate with me online, and this could be dangerous. Know that I have the right to say 'No'.	Know that people with similar interests get together online. Know that I can change my mind about trusting someone online. Know that people can be upset by what they experience online.	Know that I need to be respectful online. Know that there are good and bad ways to behave online. Know that people feel differently about the same information.	Know that there are technology specific forms of communication. (memes / emojis). Know that there are some types of harm that people may want to do to me online. Know that 'It's not my fault'	Know that sharing content can have positive and negative consequences. Know that anything I post online could, or can be, shared by someone else. Know that sharing inappropriate things online could have a serious impact on me, and the person the content relates to.

Disciplinary Knowledge

EYFS	One	Two	Three	Four	Five	Six
Know some ways I can use the internet to talk to people I know (Facetime / WhatsApp)	Know when I need to ask permission to go online. Know why I need to ask permission. Know ways to use the internet to communicate with people I know. Know why it is important to be considerate and kind online. Know how people can view things they see differently online.	Know why I should ask before sharing things about myself or others. Know some ways people can communicate with people they do not know and why this might hold risks. Know different ways I can ask for, give, or deny my permissions online. Know why I have the right to say No. Know who can help me if something happens without my consent. Know I need to ask for others permission before sharing something about them online. Know why I should ask a trusted adult before clicking 'yes' / 'agree' / or accept' online.	Know how people with similar interests can get together online. Know how knowing someone offline and online can be different. Know how 'trusting' and 'liking' someone online is different. Know why people might change their mind about trusting someone online. Know how someone's feelings can be hurt by what is written / posted online. Know the importance of giving or gaining permission before sharing online.	Know how different strategies for safe and fun experiences in online social environments can be used. Know examples of how to be respectful online and know healthy and unhealthy behaviours. Know how shared content may feel unimportant to one person, but important to others.	Know how and when it's appropriate to use technology specific forms of communication like emojis, memes, gifs. Know some people I communicate with online may want to do me or my friend's harm. Know this is not my fault. Know how people can be in online communities and describe how they might collaborate and make positive contributions. Know how someone can get help and when to tell a trusted adult. Know how I can support others who are having difficulties online.	Know how sharing something online may have a positive or negative impact. Know how to support people online and respect boundaries. Know ways in which things shared privately online can have unintended consequences (screengrabs). Know that taking and/sharing inappropriate images may have an impact for the sharer and others. Know what to do and how to help if someone is worried about shared content.

DIGITAL LITERACY: Copyright & Ownership - Know that ownership of online content is important. Know how to protect my own content and credit or seek permission for content I use.						
Substantive Knowledge						
EYFS	One	Two	Three	Four	Five	Six
Know that work I create belongs to me.	Know that other people's work does not belong to me. Know that the digital work I create belongs to me.	Know that content on the internet belongs to other people. Know ways in which other people's work online belongs to them.	Know that copying people's work from the internet is not lawful. Know copying other people's work without their permission may cause problems.	Know that I need to consider other people when I use their work. Know that there are types of work I must not use without the owner's permission (Video. Music)	Know that there are types of content that is permitted to be reused. Know about the Creative Commons and Copyright Act	Know that there are different kinds of copyright and these are protected by law.
Disciplinary Knowledge						
EYFS	One	Two	Three	Four	Five	Six
Know how to put my name on my work so others know it belongs to me.	Know how to say: 'I created it' or 'I designed it'. Know how to save my work with a suitable file name.		Know how to protect my own content. Know how to use Footers / Headers to name and date work.	Know how to add citations and reference to other people's work that I might use.	Know how to assess and justify when it is acceptable to use the work of others. Know how to find useable content online.	Know how to use search tools to find content that can be seen by others. Know how to use headers, footers and citations to, and in acknowledgementof work and sources I have used.

DIGITAL LITERACY: Online Reputation – Know that others make judgements about my reputation by what they view online. Know that information that's placed online stays there forever.						
Substantive Knowledge						
EYFS	One	Two	Three	Four	Five	Six
Know that information can be put online in different ways.	Know that information can stay online and be copied.	Know that information placed online can be there for a long time. Know that anyone's online information could be seen by others.	Know that information about people can be searched for online.	Know that online information about you can be created, copied, and shared.	Know that people make judgments about other people from what they see online.	Know that a positive online reputation is worth having and looking after. Know that my online reputation can be protected.
Disciplinary Knowledge						
EYFS	One	Two	Three	Four	Five	Six
Know how information can be put on the internet in different ways.	Know what information I should, and should not, put online. Know when to ask a trusted adult before putting information online.	Know who to talk to if something has been put online without consent, or if it is incorrect.	Know how to search for information about others online. Know how and why people are willing to share online. Know how to be careful before sharing anything personal. Know who I can ask if someone is unsure about putting information online.	Know and describe how to find information about others by searching online. Know how online information about someone could be created, copied, or shared.	Know how to search for individuals' information online and summarise the findings. Know that information online about a person can be used to make judgments about the person and these may not be correct or true.	Know ways that I can develop and maintain a positive online reputation. Know how to protect my digital personality and online reputation. Know how and when to use degrees of anonymity.

DIGITAL LITERACY: Privacy & Security - Know how personal online information can be used, shared, stored, and processed. Know how to protect privacy, systems and data.						
Substantive Knowledge						
EYFS	One	Two	Three	Four	Five	Six
Know that parents might share things about me online.	Know that passwords are used to protect information, accounts, and devices. Know that I have a school account and password.	Know that personal information is private. Know that I probably have devices at home that connect to the internet.	Know that secure passwords have combinations of characters and words.	Know that going online is never completely private. Know that I must be 13 before I can give my consent online. Know that the Data Protection Act and GDPR regulations exist.	Know that free Apps / Apps may read and share my private information with others. Know that Apps, software and devices should be kept up to date. Know the relevant plinciples of the Data Protection Act and GDPR Regulations	Know that passwords should be changed regularly. Know that reputable Apps & Services I use have terms and conditions which govern how I should use them. Know the plinciples of the Data Protection Act and GDPR Regulations
Disciplinary Knowledge						
EYFS	One	Two	Three	Four	Five	Six
Know some of my own personal information. Know who I could tell this information to safely.	Know some more detailed examples of personal information such as school or family name. Know how to keep my password safe. Know why it is important to ask a trusted adult before sharing information online.	Know what is meant by 'private' and 'keeping things private'. Know how to keep my personal information private. (Making passwords and keeping them secret). Know why and how devices at home are connected to the internet.	Know how to create a secure password and keep it private. Know some reasons how and why people should only share information with people they choose and trust. Know how connected devices can collect and share data.	Know that when I use the internet it is never completely private, and it can be monitored. Know that some online services may seek consent to store or use my personal data. Know who to ask before agreeing to data consent online. Know what the digital age of consent is and how this can impact which services ask for consent	Know what App permissions are and give examples from the Apps I might use. Know how online content can target people to gain money or information illegally. (Spam, Phishing) Know how to keep software and Apps up to date.	Know how to effectively manage passwords. Know how to act if a password is shared, lost, or stolen. Know how to increase privacy on Apps and service that I use.

DIGITAL LITERACY: Managing Online Information – Know how information is found, viewed, and interpreted. Know how to critically evaluate between fact and fake. Know how to recognise and deal with threats. (Monoxide (dhmo.org)) & (www.whiteboardblog.co.uk)

Substantive Knowledge

EYFS	One	Two	Three	Four	Five	Six
Know that some devices I could use can access the internet. Know that I can use the internet as a way of finding out information.	Know that online search engines help me find information. Know that I might see things I don't like online. Know that I can tell a trusted adult if I see something that upsets me.	Know that using key words in search engines get better results. Know that replies from Voice activated devices are not a real person. Know that information I see online may not be true.	Know that key Phrases and using punctuation will give better search results. Know that the internet can be used to buy and sell things. Know that there is a difference between 'belief', 'opinion' and 'fact' online.	Know that I should make my own decisions about information I experience. Know that there are different ways I might be persuaded to buy things online. Know that just because something is very popular or goes viral, doesn't mean it's true or good.	Know that online content should be evaluated. Know that different search technologies have different benefits and limitations. Know that the internet can take us to different information with different agendas.	Know that my choices online can be influenced & manipulated by people online or by design. Know that there are ways I can deal with online threats.

Disciplinary Knowledge

One	Two	Three	Four	Five	Six
Know how to use search engines and voice activation devices to access information online. Know how things I see online can be true or false. Know how to act at school if I see something online that upsets or worries me. Know how to act at home if I'm worried or upset.	Know how to use simple words in a search engine. Know how to navigate around a simple web page to find the information I need. Know how voice activated searching simply works. Know how to spot the difference between 'make believe' and 'real' or 'true'. Know how and why information online may not be true.	Know how to use key phrases in a search engine. Know what autocomplete is and how to choose appropriate suggestions. Know how to get the difference between 'belief', 'opinion', and 'fact'. Know why and how opinions shared online may not be true or fair. I know how to get help from a trusted adult at home and school.	Know how to analyse information for its probable accuracy and the importance of making my own decisions. Know how to search for information within wide group of technologies such as social media or video sites. Know how some different methods are used online to encourage people to buy things (pop ups, in app purchased) Know that when a lot of people share the same ideas, this doesn't necessarily make them true. Know that technology can be designed to act like living things (bots) – Know what benefits / risks these might have. Know what is meant by 'fake news' and why some people create and share fake news.	Know how different types of search technologies may limit or benefit what I do. Know what is meant by 'being sceptical' Know times when being sceptical may be useful. Know how to evaluate digital content to inform my choices. Know the difference between adverts and search results. Know key concepts of information: review, fact, opinion, belief, validity, reliability and evidence. Know ways in which the internet can draw us to information from different agendas.	Know how search engines work and how results are selected and ranked. Know how to use search technologies effectively. Know that people may present opinions as facts. Know that popularity of opinion does not make it true, fair or legal. Know the definition of the terms 'influence', 'manipulation' & 'Persuasion'. Know about persuasive design and how it can be used to influence choice.

Commented [ED1]: Fact versus fake! Facts About Dihydrogen Monoxide (dhmo.org) I've used this site very effectively with kids...they can get really emotive with it and you can just stand there and listen and push questions back at them whilst silently creasing yourself laughing! Also the tree octopus Great Fake Websites to Help Teach Students About Digital Literacy (whiteboardblog.co.uk)

DIGITAL LITERACY: Online Bullying – Know that online bullying happens. Know how to deal with online bullying by reporting, helping others and talking to trusted adults.						
Substantive Knowledge						
EYFS	One	Two	Three	Four	Five	Six
Know that people can be unkind.	Know that Online behaviour should be kind.	Know that someone who experiences bullying is not to blame. Know that bullying online and offline is a bad thing.	Know that behaving properly online is important. Know that I can get help for myself and others.	Know that bullying can happen via a range of digital media and devices.	Know that what is one person's banter may be bullying.	Know that I can capture evidence of bullying. Know that I can share this evidence with an adult, school or the Police.
Disciplinary Knowledge						
EYFS	One	Two	Three	Four	Five	Six
Know how being unkind can make people feel.	Know how to behave kindly online. Know some examples of kind behaviour online.	Know and explain what bullying is. Know how bullying can make people feel. Know and talk about how people who are being bullied can get help.	Know how to behave online and why it's important. Know how some examples of bullying might appear online. Know how to get support for myself and others.	Know and recognise when someone is upset, hurt or angry online. Know how people can be bullied through a range of different media. Know why people need to think carefully about their content and how it might affect others. (Feelings and reputation) Know how to block/report users online.	Know and explain some differences between online bullying and bullying in the physical world. Know how to get help when being bullied online. Know how to report concerns about online bullying in a variety of ways. Know how to access some services that can help people experiencing bullying.	Know how to capture evidence of bullying. Know who to share the evidence with. Know how to report bullying in different contexts.

DIGITAL LITERACY: Health, Well-being & Lifestyle – Know that technology use can impact health, well-being, and lifestyles in positive and negative ways. Know that that are Health and Safety Laws that apply to how they are other people use technology						
Substantive Knowledge						
EYFS	One	Two	Three	Four	Five	Six
Know that using technology too much is bad for my health.	Know that having breaks and limiting my time using technology is good for my health.	Know that following rules about technology use will help me be healthier.	Know that Age Restrictions are there for my good health. Know that I should follow the Age Restriction guidance.	Know that doing another activity with no technology may be healthier for me. Know that using technology can distract me from other things – both in positive and negative ways.	Know that technology can affect health and well-being – both positive and negative. Know that I should always talk to an adult about my health – not just use online sources. Know that I should ask before making any purchases online (in-App)	Know that technology can put pressure on people. Know that there are ways I can manage the pressures of technology use. Know that persuasive design is used to keep my engaged for longer.
Disciplinary Knowledge						
EYFS	One	Two	Three	Four	Five	Six
Know some rules that keep us healthy in and beyond the home when using technology. Know how to tell someone a rule about keeping healthy with technology.	Know the main rules to keep myself healthy and safe when using technology, both at home and in the wider world.	Know the simple rules for using technology at home, or in public places. Know how following the simple rules can help people using online technologies.	Know that spending too much time using online technology can be harmful to me and others. Know 'how much' is 'too much time'. Know why some online services / Apps / games have age restrictions and know I should follow this guidance. Know who to talk to if other people pressure me to watch / engage in online activities above my age.	Know when I, and others, may need to limit time spent using technology. Know some ways to help with limiting this time.	Know ways in which technology can affect health and well-being – both positive and negative. Know how to promote a healthy digital lifestyle. Know the benefits and risks of accessing information about health and well-being online, and always balance this by talking to trusted adults. Know why some services may request or take payment for additional content. Know to always ask an adult before purchasing.	Know common systems that regulate age related content (PEGI, BBFC). Know and discuss ways in which technology can put pressure on someone. Know some ways these pressures can be managed. Know some features of Persuasive design and how they are used to keep me engaged. Know and action different methods of limiting the impact of technology on my health.

Commented [ED2]: Not necessarily teach but with older ones link to Health and Safety Law around computer Technology. Need to teach kids that they are responsible for use and other people using the tech. If something happens to a.n.other use their equipment, they need to know that ignorance of the law is not an excuse and that they could be liable - goes for all legal acts they need to know about

Computer Science

1) Key Skills taught across other areas –
    i. Accessing websites, refreshing pages, ways to Zoom, Terms & Conditions, Maximise / Minimise, Left & Right Click, Copy & Paste, Logging On & Shutting Down, Digital Drawing
2) Computer Science – Coding & Programming
3) Computer Science – Technology Around Us, Hardware/Software & Networks
4) Information Technology – Data Handling
5) Information Technology – Word Processing & Typing
6) Information Technology – Presentation, Web Design and E-books
7) Information Technology – Animation & Video Creation

Key Skills to be taught across other areas.

Year One	Year Two	Year Three	Year Four	Year Five	Year Six
Accessing Websites, Refresh webpages, Zoom, Accepting Terms & Conditions, Minimise & Maximise, Immersive reader, Left & Right Click					
Know how to use a Shortcut provided. Know how to Maximise and Minimise explorer windows.	Know how to Open a web browser application (e.g., Google Chrome, Mozilla Firefox, Safari, Microsoft Edge, etc.) on your device. Know how and why to refresh a webpage. Know how to zoom in and out using the tool function. Know how to use the difference between Left and Right Click.	- Know how to Type the website's URL directly into the address bar at the top of the browser window (e.g., www.example.com). - Know how to Press Enter or Return to load the website. Know how to zoom in and out using finger gestures. Know how to use immersive reader.	Know how to open and use a search engine (e.g., Google, Bing, Yahoo) to find specific websites or information. Know how to type keywords related to the website or information you're seeking in the search box. Know how to Press Enter or click on the search button to view search results. Know how to Click on the search result link that corresponds to the desired website.	Know how to Utilize the autocomplete feature to quickly access frequently visited websites by selecting the suggested URL from the drop-down list.	Know how to Navigate to websites through hyperlinks embedded in other web pages or documents. Know how to Click on a hyperlink within a webpage or document to be redirected to the linked website.

Year One	Year Two	Year Three	Year Four	Year Five	Year Six
Copy and Paste					
Use application icons to copy and paste:  	Select the text or object you want to copy by highlighting it with your mouse cursor. - Right-click on the selected area and choose "Copy" from the context menu. - Place your cursor where you want to paste the copied content. - Right-click and select "Paste" from the context menu.	- Copy: Use the shortcut Ctrl + C (Windows) - Paste: Use the shortcut Ctrl + V Use the Snipping tool in Windows. Sources must be cited.	- Copy the content as described in the previous methods. - Switch to the target application. - Place your cursor where you want to paste the content. - Use the Paste command (right-click and select "Paste" or use the keyboard shortcut) to paste the copied content.	Use Copy with Rich formatting such as the font colour, size, colour ect. Use Copy with Rich Media such a video.	Use advanced Copying features such as copying values without formulas in spreadsheets.
Year One	Year Two	Year Three	Year Four	Year Five	Year Six
Logging on & Shutting Down					
Loggin On Power on the laptop by pressing the power button. - Wait for the operating system to load. - Enter your username and password at the login screen. - Press Enter or click the Login button to log in to the laptop. **Shutting Down** Save any open documents or files and close running applications. - Click on the Start menu or equivalent, then select "Shut Down" or "Power Off." - Follow the prompts to confirm the shutdown process.		Use Single Sign-On (SSO): - SSO is a method that allows users to log in to multiple applications or systems using a single set of Office 365 credentials.		Know how to switch between users on a shared device.	Know the functions of Hibernate and Sleep mode.

INFORMATION TECHNOLOGY: Digital Drawing & Painting. – to be taught within other units

EYFS - Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for purposes.
NC – KS1 - use technology purposefully to create, organise, store, manipulate and retrieve digital content.
NC – KS2 - 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, evaluatin g and presenting data and information.

Substantive Knowledge

One	Two	Three	Four	Five	Six
Know that digital drawing and painting involves creating artwork using electronic devices like iPads and computers. Know that basic tools in PurpleMash 2 Paint and Windows Paint, such as selecting colors, using brushes, and drawing simple shapes, are used for creating digital art.	Know that different brush sizes and types can be used in digital drawing and painting to create various effects. Know that the undo and redo functions in PurpleMash 2 Paint and Windows Paint can help correct mistakes. Know that saving and retrieving digital artwork on iPads and computers is essential for preserving and accessing their creations.	Know that more complex shapes and objects can be created in PurpleMash 2 Paint and Windows Paint to enhance digital artwork. Know that layers can be used to organize elements and facilitate easy editing in their digital artwork. Know that basic image editing tools like cropping and resizing can be employed to refine and improve digital artwork.	Know that different brush effects, such as transparency and texture, can be applied in digital drawing and painting to add depth and detail to their artwork. Know that different color palettes and gradients can be utilized to create visually appealing compositions. Know that combining and arranging multiple images or elements in PurpleMash 2 Paint and Windows Paint can result in collages or unique compositions.	Know that shading and highlights can be incorporated to create a sense of volume and three-dimensionality in their digital artwork. Know that advanced tools like layer blending modes and filters can be used to achieve unique visual effects. Know that exporting and sharing digital artwork in different file formats, such as JPEG or PNG, allows for easy sharing and presentation.	Know that digital artwork can be created with intricate details and advanced techniques using PurpleMash 2 Paint and Windows Paint. Know that advanced selection tools can be employed to isolate specific areas or objects for editing or manipulation. Know that critically analyzing and evaluating their own and others' digital artwork, considering elements such as composition, color choice, and storytelling, is important for artistic growth.

Disciplinary Knowledge

One	Two	Three	Four	Five	Six
Know how to use drawing tools (pencil, brush, eraser) to create simple shapes and lines. Know how to draw basic objects and shapes. Know how to use different colors and experiment with filling shapes.	Know how to use the range of drawing tools available. Know how to draw basic objects and shapes. Know how to use different colors and tones and fill / draw the objects they create.	Know how to use brushes, textures, and effects to create more complex artwork. Know how to Create drawings using basic shapes (circles, squares, triangles) and arrange them to form patterns and designs. Know how to use different layers to add depth and detail to drawings.	Know how to use symmetry and create symmetrical drawings using digital tools. Incorporating patterns and shapes into larger compositions. Know how to edit using techniques like resizing, cropping, and rotating drawings. Know how to use digital tools to modify and enhance artwork, such as adjusting colors, adding filters, or applying special effects.	Know how to use the skills to draw and depict characters, both original creations and existing characters. Know how to create detailed backgrounds and scenes to tell visual stories or illustrate ideas. Exploring collage techniques by combining different digital elements (images, textures, text) to create compositions. Know how to use mixed media techniques, such as blending traditional drawing with digital elements.	Know how to organize and present artwork in a digital portfolio or presentation format. Know how to share artwork with peers, teachers, or family members, both online and offline.

COMPUTER SCIENCE: Coding & Programming -					
NC – KS1 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. **NC – KS2** 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					
Substantive Knowledge					
One	Two	Three	Four	Five	Six
Know that an **Algorithm** is a set of instructions. Know that for instructions to successfully complete a task, they need to be in the correct order.	Know that programs execute by following precise and unambiguous instructions. Know that programs may not work because of faults called bugs. Know that you can predict what a simple algorithm will do by reading the code.	Know that specific programs accomplish specific goals. Know that using **Repetition** makes algorithms more efficient. Know that there are various forms of input	Know that **simple Selection** is part of a program which runs if a condition is met. Know that there are different types of output. Know that **Logical Reasoning** can help detect and correct errors in programs.	Know that **Decomposition** is breaking down problems into smaller parts. Know that **Conditional Statements** are 'true' or 'false'. Know that **Variables** can change depending on the program input	Know that combining distinctive features of programming leads to Greater complexity of task to be accomplished. Know that **Functions** can be used to hide specific code in a program. Know that generic code elements are used across a range of
Disciplinary Knowledge					
One	Two	Three	Four	Five	Six
Know how to create a simple program e.g., sequence of instructions for a Bee Bot. Know how to use sequence in programs. Know how to locate and fix bugs in my program.	Know how to create programs on a variety of digital devices. Know how to debug programs of increasing complexity. Know how to use logical reasoning to predict the outcome of simple programs. (Logical reasoning is predicting what will happen when the algorithm is followed)	Know how to design and create programs. Know how to write programs that accomplish specific goals. Know how to use repetition in programs. Know how to work with various forms of input.	Know how to use simple selection in programs. Know how to work with various forms of output. Know how to use logical reasoning to systematically detect and correct errors in programs.	Know how to create programs by decomposing them into smaller parts. Know how to use selection in programs. Know how to use conditions in repetition commands. Know how to work with variables. Know how to create programs that control or simulate physical systems. Know how to evaluate my work and identify errors.	Know how to use a range of sequence, selection and repetition commands combined with variables as required to implement my design. Know how to create procedures to hide complexity in programs. Know how to identify and write generic code for use across multiple projects. Know how to critically evaluate my work and suggest improvements · Know how to identify and use basic HTML tags.

Coding & Programming Key Vocabulary

1. **Algorithm**: An algorithm is a set of instructions or steps that tell a computer what to do to solve a problem or complete a task.
2. **Repetition:** Repetition means doing something over and over again.
In computer programs, it helps us repeat certain actions until we finish a task or reach a goal.
3. **Simple Selection:** Simple selection means making choices in a computer program.
It's like deciding what to do based on certain conditions or situations.
4. **Logical Reasoning:** Logical reasoning is about thinking and making smart decisions.
In computing, it means using logical rules and thinking carefully to solve problems and make the computer do what we want.
5. **Decomposition**: Decomposition is breaking a big problem into smaller, easier parts.
It helps us understand and solve complex tasks by taking them step by step.
6. **Conditional Statements:** Conditional statements are like "if-then" rules for computers.
They help the computer decide what to do based on certain conditions or situations.
7. **Variables:** Variables are like special containers that hold different types of information in a computer program.
We can change the information inside the containers as we go along.
8. **Functions:** Functions are like special tools or helpers that do specific jobs in a computer program.
They make our work easier by letting us reuse the same piece of code again and again.

COMPUTER SCIENCE: Technology Around Us, Hardware/Software & Networks					
NC KS2 - Understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration • Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.					
Substanive Knowledge					
One	Two	Three	Four	Five	Six
Know that Technology is all around us and how some pieces of technology help us. Know that computers can form part of technology.	Know that computers contain certain similar external	Know that computers in a school are connected in a network. Know that the school network has different parts.	Know that servers on the Internet are located across the planet. Know that Webpages are viewed on the Internet.	Know that pages are ranked in search engine results. Know the basics of how daa is transferred between computers.	Know that webpages are built using HTML. Know that HTML stand for Hyper-text Mark-up Language.
Discipliary Knowledge					
One	Two	Three	Four	Five	Six
Know how to identify technology and devices with computers. Know how to identify external computer parts such as keyboard, monitor and speakers.	Know how to identify how technology and computers can make our lives easier. Know how to identify some common internal and external input and output devices linked to computers.	Know how and why computers are networked. Know how the Internet and the World Wide Web (WWW) are different. Know how and where the parts of the school network can be indentified.	Know how email is sent across the Internet. Know how the Internet enables us to collaborate.	Know how we view web pages on the Internet. Know how to use search technologies effectively. Know that web spiders index the web for search engines. Know and appreciate how pages are ranked in a search engine.	Know what HTML is and recognize HTML tags. Know a range of HTML tags and can remix a web page. Know how to create a webpage using HTML or drag and drop.

INFORMATION TECHNOLOGY: Data Handling - Include Binary Games (0-1)					
NC – KS1 use technology purposefully to create, organise, store, manipulate and retrieve digital content. **NC – KS2** 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					
Substantive Knowledge					
One	Two	Three	Four	Five	Six
Know that images or text can be sorted into groups using a digital device. Know that the pieces of information are called data. Know that data can be shown in different ways.	Know that digital data can be sorted in different ways. Know that branching databases sort data with 'yes' or 'no' questions & answers.	Know that data can be entered into a spreadsheet in rows and columns.	Know that data entered in to a spreadsheet can be exported in a range of charts. Know that multiple choice quizzes are based in data. Know that there are different ways to collect data.	Know that results from data collection can be analysed. Know that formulas can be used in spreadsheets to calculate simple mathematical functions. Know the Spreadsheet cells can be formatted in different ways.	Know that formulas can be written to solve maths problems. Know that online quizzes can contain a range of different media and question type.
Disciplinary Knowledge					
One	Two	Three	Four	Five	Six
Know how to sort images or text into two or more categories on a digital device. Know how to collect data on a topic. Know how to create a tally chart and pictogram.	Know how to sort digital objects into a range of charts such as Venn diagrams, Carroll diagrams and bar charts using different apps and software. Know how to create a branching database using questions	Know how to create my own sorting diagram and complete a data handling activity with it using images and text. Know how to start to input simple data into a spreadsheet.	Know how to create my own online multiple-choice questionnaire. Know how to input data into a spreadsheet and export the data in a variety of ways: charts, bar charts, pie charts. Know how to understand how data is collected.	Know how to create and publish my own online questionnaire and analyse the results. Know how to use simple formulae to solve calculations including =sum and other statistical functions. Know how to edit and format difference cells in a spreadsheet.	Know how to write spreadsheet formula to solve more challenging maths problems. Know how to create and publish my own online quiz with a range of media (images and video)

INFORMATION TECHNOLOGY: Word Processing / Typing -					
NC – KS1 use technology purposefully to create, organise, store, manipulate and retrieve digital content. **NC – KS2** 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.					
Substantive Knowledge					
One	Two	Three	Four	Five	Six
Know that letters on a computer keyboard are written in capitals. Know that letters can be changed to capitals by pressing Caps Lock. Know that groups of keys have different jobs on a keyboard.	Know that I can use the mouse cursor or arrow keys to navigate around the text. Know that some keys combine to make different outputs onscreen (Shift+f=F)	Know that there is a correct finger placement for typing. Know that the Font can be changed in a variety of ways. Know that images can be added to the text.	Know that my typing is better when I remember the key placement. Know that there is spelling and grammar checkers. Know that words should be single spaced. Know that common short cut key combinations mean I can be more efficient.	Know that typing accurately is important. Know that Hyperlinks can be used to navigate between sources. Know that sounds can be added to documents. Know that the contents of a document can be changed to suit the purpose.	Know that typing accurately and efficiently is important. Know that documents I publish should be accurate and fit for purpose.
Disciplinary Knowledge					
One	Two	Three	Four	Five	Six
Know how to type words I know correctly on a digital device. Know to use the space bar to make space and delete to delete letters/words. Know how to make a new line using enter/return. Know to use Caps Lock for capital letters.	Know to use the space bar only once between words and navigate to words letter to edit. Know how to copy and paste images and text. Know to use Shift for capital letters. Know how to add images alongside text.	Know how to use index fingers on keyboard home keys (f/j), use left fingers for a/s/ d/f/g, and use right fingers for h/j/k/l. Know how to edit the style and effect of my text and images to make my document more engaging and eye-catching. Know how to use cut, copy and paste to quickly duplicate and organise text.	Know how to combine digital images from different sources, objects, and text to make a final piece of a variety of tasks: posters, documents, eBooks, scripts, leaflets. Know how to use keyboard shortcuts such as cut, copy and paste and delete to organise text. Know how to use font sizes appropriately for audience and purpose. Know how to use spelling and grammar checkers.	Know how to apply hyperlinks. Know how to import sounds to accompany and enhance the text in my document. Know how to organise and reorganise text on screen to suit a purpose	Know to choose the best application to demonstrate my learning. Know how to format text to suit a purpose. Know how to publish my documents online regularly and discuss the audience and purpose of my content.

INFORMATION TECHNOLOGY: Presentation, Web Design and E-Book Creation					
EYFS - Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for purposes. **NC – KS1 -** use technology purposefully to create, organise, store, manipulate and retrieve digital content. **NC – KS2** - 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, evaluatin g and presenting data and information.					
Substantive Knowledge					
One	Two	Three	Four	Five	Six
Know that images can be arranged in a storyboard or to show my understanding	Know that images and voice labels can be added to presentations. Know that images can be imported into my presentations from a range of sources	Know that information can be presented in different ways. Know that webpages need to be interesting for the user.	Know that hyperlinks can help navigation. Know that e-books can contain text, images and sounds.	Know that collaboration can happen digitally. Know that a variety of effects can be selected in a piece of presentation software. Know that Webpages contain a variety of media forms.	Know that Apps are designed to be easy to use and contain hyperlinks. Know that the user must have a good experience with the applications I design. Know that content is evaluated, and improvements can be made.
Disciplinary Knowledge					
One	Two	Three	Four	Five	Six
Know how to add labels to an image. Know how to order images to create a simple storyboard. Know how to create a simple spider diagram. Know how to sequence a series of pictures to explain my understanding of a topic.	Know how to add voice labels to an image. Know how to add a voice recording to a storyboard. Know how to add speech bubbles to an image to show what a character thinks. Know how to import images to a project from the web and camera roll	Know how to create an interactive e-book / comic with sounds, formatted text and video. Know how to annotate an image with videos. Know how to create a simple web page. Know how to create a simple digital timeline/mindmap	Know how to create an interactive quiz eBook introducing hyperlinks. Know how to create an eBook with text, images and sound. Know how to create a presentation demonstrating my understanding with a range of media. Know how to create a digital timeline/mindmap and include different media - sound and video.	Know how to collaborate with peers using online tools, e.g. blogs, Google Drive, Office 365. Know how to create and export an interactive presentation including a variety of media, animations, transitions and other effects. Know how to create a webpage and embed video. Know how to create an interactive guide to a image by embedding digital content and publishing it online.	Know how to design an app prototype that links multimedia pages together with hyperlinks. Know how to choose applications to communicate to a specific audience. Know how to create a web site which includes a variety of media. Know how to evaluate my own content and consider ways to improvements.

INFORMATION TECHNOLOGY: (Y1/2) Animated Stories, (Y3/4) Stop Frame Animation & (Y5/6) Video Creation -

NC – KS1 use technology purposefully to create, organise, store, manipulate and retrieve digital content.
NC – KS2 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.

Substantive Knowledge (PurpleMash Story Animation)		**Stop Frame Animation**		**iMovie Trailers and Movies**	
One	Two	Three	Four	Five	Six
Know that digital story pictures can have different features like backgrounds and sprites. Know that animation means to move	Know that digital stories can include animations, sounds, and typing of the story.	Know that animation is a sequence of drawings or photographs. Know that stop frame animations require small movements between each frame. Know that animations are stories and need a plan / Story board. Know that onion skinning is a technqiue where the previous frame can be seen. Know that other media can be added such as titles, music, pictures.		Know that there are common features of video filming technique. Know video capture and editing software has different features. Know that different camera angles are used in filming. Know that storyboards have a scene image, technique description and script if required. Know that different filiming techniques are used for different reasons. Know that film clips can be moved and edited. Know that work can be reshot and replaced. Know that videos can have titles, music, and other features in addition to the actual footage.	

Disciplinary Knowledge					
One	Two	Three	Four	Five	Six
Know how to open the application in Purple Mash Know how to choose backgrounds, choose and add Sprites. Know how to start typing the story in the text box. Know how to add a new page to the story Know how to add and delete used features. Know how to add sound	Know how to open the more advance story app in PurpleMash. Know how to apply animation to the Sprites and inlcude more than one Sprtie. Know how to type the story for the picture on each slide. Know how to duplicate slides. Know how to use the range of tools available including recroding and using own sounds.	Know how to draw a short sequence of pictures to create a flip book animation. Know how to explain how a flip book works. Know how to create a simple story board. Know how to plan an animation with settings, characters, and an Event. Know how to make animations better using simple editing. Know how to import into iMovie. Know how to add music	Know how to draw a longer sequence of pictures to create a flip book animation. Know how to plan an animation with settings, characters, and Plot. Know how to use onion skinning to judge the frame-by frame movement. Know how to make animations better by reshooting and reordering. Know how to import into iMovie and add music titles.	Use a movie Template as a guide to camera workd and photgraphy. Know how to identify features of videos. Know how to compare features used in different videos. Know how to use basic features of editing software. Know how to film different camera angles. Know how to include different filming techniques including static, Zoom, Pan and Tilt Know how to plan filming against a story board. Know how to move / delete add film clips using the software. Know how to evaluate film clips and replace	Know how to create and edit a Movie using Imovie software. Know how to vary the shots used to create the desired effects. Know how to add titles, transitions and edit smoothly. Know how to compile, share and evaluate final movies.

Cycle A	Year One	Year Two	Year Three	Year Four	Year Five	Year Six
HT1	**Online Safety** Online Bullying	**Online Safety** Online Bullying	**Online Safety** Online Bullying	**Online Safety** Online Bullying	**Online Safety** Online Bullying	**Online Safety** Online Bullying
HT2	**Computer Science** Beebots / Apps / ScratchJr	**Computer Science** Coding – Code.org / Scratch	**Computer Science** Coding - Microbits	**Computer Science** Coding – Microbits	**Computer Science** Coding – Microbits	**Computer Science** Coding - Microbits
HT3	**Online Safety** Self image & Identity	**Online Safety &** Self image & Identity + Typing Course	**Online Safety** Self image & Identity + Typing Course	**Online Safety** Self image & Identity + Typing Course	**Online Safety** Self image & Identity	**Online Safety** Self image & Identity
HT4	**Information Technology** Presentation (Art & Music)	**Information Technology** Presentation (Art & Music)	**Information Technology** Presentation (Powerpoint)	**Information Technology** Presentation (Powerpoint)	**Information Technology** Presentation (Website design)	**Information Technology** Presentation (Website design)
HT5	**Online Safety** Relationships & Reputation	**Online Safety** Relationships & Reputation	**Online Safety** Relationships & Reputation	**Online Safety** Relationships & Reputation	**Online Safety** Relationships & Reputation	**Online Safety** Relationships & Reputation
HT6	**Information Technology** Technology Around us	**Information Technology** Computer Hardware	**Information Technology** Data Handling & Networks	**Information Technology** Data Handling & Networks	**Information Technology** Data Handling	**Information Technology** Data Handling
Cycle B	Year One	Year Two	Year Three	Year Four	Year Five	Year Six
HT1	**Online Safety** Privacy & Security	**Online Safety** Privacy & Security	**Online Safety** Privacy & Security	**Online Safety** Privacy & Security	**Online Safety** Privacy & Security	**Online Safety** Privacy & Security
HT2	**Computer Science** Coding	**Computer Science** Coding	**Computer Science** Coding	**Computer Science** Coding	**Computer Science** Coding	**Computer Science** Coding
HT3	**Online Safety** Managing Information + Copyright & Ownership	**Online Safety** Managing Information + Copyright & Ownership	**Online Safety** Managing Information + Copyright & Ownership	**Online Safety** Managing Information + Copyright & Ownership	**Online Safety** Managing Information + Copyright & Ownership	**Online Safety** Managing Information + Copyright & Ownership
HT4	**Information Technology**	**Information Technology**	**Information Technology**	**Information Technology**	**Information Technology**	**Information Technology**
HT5	**Online Safety** Health, Well-being, Lifestyle	**Online Safety** Health, Well-being, Lifestyle	**Online Safety** Health, Well-being, Lifestyle	**Online Safety** Health, Well-being, Lifestyle	**Online Safety** Health, Well-being, Lifestyle	**Online Safety** Health, Well-being, Lifestyle
HT6	**Information Technology** Animated Stories	**Information Technology** Animated Stories	**Information Technology** Stop Frame Animation	**Information Technology** Stop Frame Animation	**Information Technology** Making Movies	**Information Technology** Making Movies

Computer Science Glossary

NB: Where key words repeat, the definitions are refined. These terms are to be used throughout the year.

Year One

- **Algorithm:** A step-by-step set of instructions or rules for solving a problem or completing a task.
- **Debugging:** Finding and fixing errors or mistakes in a computer program or activity.
- **Code:** Instructions or commands written in a programming language that tell a computer what to do.
- **Input:** Information or data entered into a computer or a device.
- **Internet:** A global network that connects computers and devices worldwide, allowing communication and access to information.
- **Keyboard:** A device with buttons or keys used to input letters, numbers, and commands into a computer.
- **Output**: Information, data, or results that a computer or device produces.
- **Password:** A secret combination of letters, numbers, or symbols used to access a computer, device, or online account.
- **Programming:** The process of writing and creating instructions (code) for a computer or device to do specific tasks.
- **Software**: Programs, applications, or instructions that run on a computer or device, allowing it to perform various functions.
- **Tablet**: A portable device with a touchscreen that allows users to access information, play games, and perform various tasks.
- **Technology**: The use of scientific knowledge for practical purposes
- **Trackpad**: An input device to control the on-screen cursor.
- **User:** A person who interacts with a computer, device, or software to perform tasks or access information.

Year Two

- **Algorithm:** A sequence of steps or instructions that solve a problem or complete a task.
- **Binary:** A number system that uses only two digits, 0 and 1, to represent data in computers.
- **Hardware:** The physical components of a computer system, such as the monitor, keyboard, mouse, and printer.
- **Internet Safety:** Rules, practices, and precautions to ensure safe and responsible use of the internet, including protecting personal information and avoiding online risks.
- **Keyboard Shortcuts:** Key combinations that perform specific functions or commands, providing a quicker way to navigate and operate a computer or software.
- **Programming Language:** A set of rules and instructions used to write code that can be understood and executed by a computer.
- **Search Engine:** A software tool that allows users to search for information on the internet by entering keywords or phrases.
- **Software Application (App):** A program or collection of programs designed to perform specific tasks or functions, such as word processing, image editing, or playing games.
- **Storage:** The act of saving and retaining data or information in a computer system or external devices, such as hard drives or cloud storage.
- **User Interface:** The visual or graphical layout that allows users to interact with a computer or software, typically including menus, buttons, and icons.
- **Virus:** A type of malicious software or code that can replicate and infect computer systems, causing damage or disrupting normal operations.
- **Web Browser:** A software application used to access and view websites on the internet, such as Google Chrome, Mozilla Firefox, or Microsoft Edge.
- **Website:** A collection of web pages linked together and accessible through a unique address (URL) on the internet.

Year Three

- **Animation:** The process of creating the illusion of motion by displaying a series of images or frames in quick succession.
- **Coding:** The process of writing instructions or commands in a programming language to create computer programs or software.
- **Debugging:** The process of identifying and fixing errors or bugs in a computer program.
- **Digital Citizenship:** The responsible and ethical use of technology and online resources, including understanding digital rights, privacy, and online behavior.
- **HTML** (Hypertext Markup Language): The standard markup language used for creating web pages and structuring content on the internet.
- **Internet of Things (IoT)**: The network of physical devices, vehicles, appliances, and other objects embedded with sensors, software, and connectivity, allowing them to connect and exchange data.
- **Keyboarding**: The skill of typing on a keyboard accurately and efficiently.
- **Programming:** The act of writing instructions or code that enables computers to perform specific tasks or solve problems.
- **Robotics:** The branch of technology that deals with the design, construction, operation, and application of robots.
- **Spreadsheet:** A digital tool used to organize, analyze, and manipulate data in rows and columns.
- **User Interface (UI)**: The visual and interactive elements that enable users to interact with computer systems or software.
- **Video Editing:** The process of modifying and rearranging video clips, adding effects, transitions, and audio to create a final edited video.
- **Web Design:** The process of creating and arranging the visual layout, structure, and content of websites.
- **Word Processing:** The creation, editing, and formatting of text documents using a computer program, such as Microsoft Word or Google Docs.

Year Four

- **Binary Code**: A coding system that uses a combination of 0s and 1s to represent information in computers.
- **Cybersecurity:** Measures and practices to protect computer systems, networks, and data from unauthorized access, damage, or theft.
- **Data Representation:** The ways in which data is stored, organized, and represented in computers, such as binary, text, images, and sound.
- **Debugging:** The process of finding and fixing errors or bugs in computer programs or code.
- **Encryption:** The process of converting data into a secret code to prevent unauthorized access or tampering.
- **Input Device**: Hardware devices used to enter information or commands into a computer system, such as a keyboard, mouse, or touchscreen.
- **Logic Gates**: Basic building blocks of digital circuits that perform logical operations, such as AND, OR, and NOT.
- **Network:** A collection of computers and other devices connected to share resources and communicate with each other.
- **Output Device**: Hardware devices used to display or present information or results from a computer system, such as a monitor, printer, or speaker.
- **Programming Language:** A set of rules and syntax used to write instructions (code) for computers to perform specific tasks or operations.
- **Search Engine**: A software tool that allows users to search for information on the internet by entering keywords or queries.
- **Spreadsheet:** A digital tool used to organize, analyze, and manipulate data in rows and columns, commonly used for calculations and data management.
- **User Interface (UI):** The visual and interactive elements that enable users to interact with computer systems or software.
- **Video Conferencing:** Real-time audio and video communication between people in various locations using computer networks or the internet.
- **Website Design:** The process of planning, creating, and arranging the visual layout, structure, and content of websites.

Year Five

- **Algorithm:** A step-by-step procedure or set of rules to solve a problem or accomplish a specific task.
- **Artificial Intelligence (AI):** The development of computer systems capable of performing tasks that normally require human intelligence, such as speech recognition or decision-making.
- **Binary System**: A number system that uses only two digits, 0 and 1, to represent information and data in computing.
- **Coding:** The process of writing instructions or code in a programming language to create software, websites, or applications.
- **Data Compression:** The process of reducing the size of data files to save storage space or transmit data more efficiently.
- **Database Management System (DBMS):** Software that allows users to create, organize, and manage databases to store and retrieve data.
- **Digital Citizenship**: The responsible and ethical use of technology, including online behavior, digital etiquette, and understanding digital rights and responsibilities.
- **Internet Protocol (IP):** A set of rules that governs how data is sent and received over the internet.
- **Machine Learning**: A subset of artificial intelligence where computer systems learn and improve from experience or data without explicit programming.
- **Network Security:** Measures and practices to protect computer networks and data from unauthorized access, attacks, or vulnerabilities.
- **Programming Language:** A formal language used to write instructions or code for computer programs.
- **Robotics:** The interdisciplinary field involving the design, construction, and operation of robots.
- **Virtual Reality (VR):** An interactive and immersive experience generated by a computer, simulating a three-dimensional environment that can be explored and interacted with.
- **Web Development:** The process of designing, creating, and maintaining websites, including aspects such as web design, coding, and content management.
- **Web Hosting:** The service that allows individuals or organizations to make their websites accessible and available on the internet.

Year Six

- **Binary Code:** A coding system that represents information using a combination of 0s and 1s.
- **Cybersecurity:** The practice of protecting computer systems, networks, and data from unauthorized access, attacks, or damage.
- **Encryption:** The process of converting data into a secret code to ensure its confidentiality and security.
- **HTML (Hypertext Markup Language):** The standard markup language used for creating web pages and structuring content on the internet.
- **Internet of Things (IoT):** The network of physical objects embedded with sensors, software, and connectivity, enabling them to exchange data and interact with the internet.
- **Network Topology:** The arrangement or structure of a computer network, including how devices are connected and how data flows between them.
- **Programming Language**: A formal language used to write instructions or code that computers can understand and execute.
- **Responsive Web Design**: Designing websites to adapt and display optimally across different devices and screen sizes, such as desktops, tablets, and mobile phones.
- **Search Engine Optimization (SEO):** The process of optimizing a website to improve its visibility and ranking in search engine results.
- **Spreadsheet:** A digital tool used to organize, calculate, and analyze data in rows and columns, commonly used for budgeting, data analysis, and mathematical calculations.
- **User Experience (UX):** The overall experience and satisfaction a user has when interacting with a website, application, or digital product.

- **Virtual Reality (VR):** An immersive technology that creates a simulated environment, allowing users to interact and engage with a computer-generated world.