Computing Long Term Plan

Digital Agency has its own planning document, as it is integrated across multiple areas of the curriculum in a variety of ways.

Subject: Computing
The overarching intent of this curriculum is to progressively develop children's digital agency, computational thinking, and online safety awareness, empowering them to confidently and responsibly use technology to communicate, create, and solve problems in a safe and ethical digital world.

Foundation Stage		
	Nursery	**Reception**
Substantive Knowledge	• Show an interest in technological toys/objects. • **Show skill in making toys/technology work by pressing parts.** • Acknowledge that technology has a part in everyday life.	• Know how to operate simple equipment. • Know that information can be retrieved by using a computer. • **Use simple hardware to interact with age-appropriate software.** • Name and identify a Bee Bot.
Disciplinary Knowledge	• Explore technological toys/objects by pushing buttons, pulling levers, etc. • Achieve effects such as making sound, movement or light by pressing parts. • Role play using a camera, mobile phone, laptop, iPad, etc.	• Use digital pens, CD player, remote control. • Adults to model/explain information retrieval by using a computer. • Use the IWB to draw, write or manipulate simple software. • Watch an adult model how a Bee Bot can be programmed. • Explore Bee Bots by pushing their buttons without intentionally programming them.

ELG		
	<u>Understanding the World</u> – Children recognise that a range of technology is used in places such as homes and schools. – They select and use technology purposefully to support their learning. – They show awareness of online safety and the role of trusted adults. <u>Personal, Social and Emotional Development (PSED)</u> – Show an understanding of their own feelings and those of others and begin to regulate behaviour accordingly. – Explain the importance of privacy and recognising unsafe situations (online and offline). – Understand appropriate ways to ask for help and who to trust when using technology.	<u>Communication and Language</u> – Listen carefully to and follow multi-step instructions, including those for using devices or apps. – Express ideas and feelings using full sentences, including when explaining what they are doing with digital tools. – Ask questions and engage in discussions about how and why things work, particularly when exploring hardware and software. <u>Expressive Arts and Design</u> – Safely use and explore a variety of digital media, tools, and materials to express ideas, experiences, and imagination. – Share creations and explain the processes used, including digital animation or photography

Year Group	Year 1 Autumn	Year 1 Spring	Year 1 Summer
Learning Theme	**Leading a Healthy Digital Life & Programming** *Health, Wellbeing and Lifestyle* *Online Reputation* *Privacy and Security*	**Being Safe Online & Programming** *Self-Image and Identity* *Online Relationships* *Online Bullying*	**Being Responsible Online & Programming** *Managing Online Information* *Copyright and Ownership*
Substantive Knowledge	Coding • A program is a set of instructions that tells a device what to do. • Instructions must be followed in a specific order. • **Bee Bots follow instructions exactly.** • Simple directional commands control movement. • An algorithm is a simple sequence of steps. • Name the controls of a Bee Bot – go, stop, up, down, forwards, backwards, turn. Online Safety • Passwords keep devices and information secure. • Information that is shared online can stay there for a very long time. • Personal information includes names, addresses, pictures and birth dates. • Personal information should not be shared online. • **There are rules to keeping safe online.**	Coding • Programs can be changed to make different things happen. • Instructions can be predicted before running a program. • **Errors happen when instructions are in the wrong order.** • Programs can be created using on-screen blocks in Scratch Jr. Online Safety • There may be people online who could make someone feel sad, embarrassed or upset. • **Speak to an adult I can trust should I be upset by someone online.** • Certain behaviours online can upset others. • How to behave online in ways that do not upset others • **I should ask permission to do something online.** • The internet can be used to communicate with family or close friends.	Coding • Programs can be tested to check if they work as expected. • **Mistakes in programs can be fixed by changing instructions.** • Programs can control more than one action, such as movement and sound. • A program has a clear start and end. Online Safety • The internet can be used to find things out. • **Information online can real or make believe / a joke.** • An adult can help me decipher if information is trustworthy. • Work I create using technology belongs to me.
Disciplinary Knowledge	Coding • Give and follow simple verbal instructions. • Physically act out sequences to understand order. • Predict what will happen before running a program. • Use precise language to describe instructions. Online Safety • Articulate when you would ask an adult for help. • Explain rules to keep myself safe when using technology both in and beyond the home. • Name 3 adults that can help me if I am unsure about information I want to share.	Coding • Modify simple programs to see how outcomes change. • Talk through algorithms before running them. • Identify when instructions are in the wrong order. • Explore Scratch Jr blocks through guided play. • Use trial and error to correct mistakes. Online Safety • Give examples of different adults I can ask for help. • Give examples of behaviours that are unlikely to upset others. • Give examples of behaviours that can make others feel more pleasant emotions. • Give examples of situations where permission must always be sought. • Use the internet with adult support to communicate with people I know	Coding • Test programs to check outcomes. • Identify mistakes and change instructions. • Create programs with more than one action. • Recognise a clear start and end to a program. • Explain what was changed and why. Online Safety • Give simple examples of how to find information using digital technologies. • Recognise that objects and work can belong to them. • Demonstrate how and why they own digital work they have created. • Explain why digital work belongs to them.

Year Group	Year 2 Autumn	Year 2 Spring	Year 2 Summer
Learning Theme	**Leading a Healthy Digital Life & Programming** *Health, Wellbeing and Lifestyle* *Online Reputation* *Privacy and Security*	**Being Safe Online & Programming** Self-Image and Identity Online Relationships Online Bullying	**Being Responsible Online & Programming** Managing Online Information Copyright and Ownership
Substantive Knowledge	Coding • A program is based on a planned algorithm. • Programs can be written and run on Bee-Bots and Scratch Jr. • Outcomes of a program can be predicted. • **Programs can be improved by changing instructions.** Online Safety • Technology can impact well-being and physical health. • Rules and guidance can vary by context. • How to find information online. • What is ok to share online and what isn't. • **Passwords are important for accounts/devices.** • There is a difference between information shared on public platforms and privately. • Appropriate types of content that can be shared online. • Ways to protect online content. • A wide range of internet connected devices at home.	Coding • **Debugging means finding and fixing errors in a program.** • Repeating instructions can make programs shorter and clearer. • Programs must be precise to work correctly. • Errors may occur because of missing or extra instructions. Online Safety • People can choose different pictures online to what they look like in real life. • Recognise issues online that might make them feel sad, worried uncomfortable or frightened. • **Why it is unsafe to communicate with someone online who they don't know in real life.** • Ask before sharing things about others online. • Characteristics that are typical of bullying behaviour. • The difference between accidental and intentional behaviours that may affect others.	Coding • Programs can include repetition to repeat actions. • **Symbols and blocks represent instructions in Scratch Jr.** • Programs can be evaluated to decide if they meet a goal. • Small changes to code can significantly change outcomes. Online Safety • **Keywords can be used in search engines.** • What voice activated searching is and how it might be used. • The difference between things that are 'made up' and things that are 'true' or 'real'. • Why some information I find online may not be true. • **Content on the internet may belong to other people.** • Why other people's work belongs to them.
Disciplinary Knowledge	Coding • Plan programs verbally or using simple visual plans. • Predict outcomes and explain reasoning. • Input sequences on Bee-Bots and Scratch Jr. • Improve programs by adjusting instructions rather than restarting. Online Safety • Recount rules, guidance or conversations around their own use of technology. • Explain how they can reduce the impact of well-being or health issues when using technology. • Explain ways in which they can self-manage their use of technology. • Advice younger students that if they have a worry about something someone else has put online, they should talk to a trusted adult. • Name 3 features of a strong password.	Coding • Identify errors in given programs. • Debug step by step by testing one change at a time. • Recognise repeated patterns in instructions. • Replace repeated commands with repetition where appropriate. Online Safety • Know who they can go to for help. • Know how to ask for help. • Explain who can help them if I feel under pressure to agree to something they are unsure about or don't want to do. • Identify who they can turn to for help and support. • Recognise some sources of support in different contexts (e.g. school, home, online).	Coding • Use repetition blocks in Scratch Jr. • Evaluate whether a program meets its goal. • Explain how small changes affect outcomes. • Compare different solutions to the same problem. Online Safety • Describe and demonstrate how to get help from a trusted adult if they find content that makes them feel sad, uncomfortable, worried or frightened. • Demonstrate how to navigate a simple webpage to get to information I need. • Demonstrate how to use voice activated searching. • Sort information between 'false' and 'real'.

Year Group	Year 3 Autumn	Year 3 Spring	Year 3 Summer
Learning Theme	**Leading a Healthy Digital Life & Programming** *Health, Wellbeing and Lifestyle* *Online Reputation* *Privacy and Security*	**Being Safe Online & Programming** Self-Image and Identity Online Relationships Online Bullying	**Being Responsible Online & Programming** Managing Online Information Copyright and Ownership
Substantive Knowledge	Coding • Programs are made up of sequences of instructions. • An event can start a program. • Scratch Jr characters can respond to user actions. • **Different sprites can be controlled independently.** Online Safety • **There are positive and negative impacts to using technology and the internet.** • Excessive technology use can have a negative impact on thoughts and feelings. • Search results (including images, news and videos) should be checked. • What 'personal' information is. • Passwords protect their reputation and the information they consider important.	Coding • Programs can control movement, appearance, and sound. • **A program can include multiple scripts.** • Instructions run in the order they are written. • Testing helps identify mistakes in logic. Online Safety • What is meant by the term 'identity'. • How to represent yourself online. • **Ways in which and why you might change your identity depending on what you're doing online.** • Explain ways in which and why I might change my identity depending on what I am doing online (e.g. gaming; using an avatar; social media). • What 'personal' information is. • Ask before you share information about others online. • Appropriate ways to behave towards other people online and why this is important. • **What harmful online behaviour looks like.** • Methods people may use to bully others.	Coding • **Programs can be broken into smaller parts to make them clearer.** • Events allow programs to be interactive. • Debugging may involve changing the order or instructions. • Algorithms can be refined for better outcomes. Online Safety • We all have rights over the content we create. • **Whilst the internet may be 'free' not all content is 'free to use'.** • Copying someone else's work from the internet without permission isn't fair. • What autocomplete is. • **Autocomplete suggestions may not be helpful.** • The internet can be used to sell and buy things. • Different contexts for buying and selling online. • The difference between a 'belief', an 'opinion' and a 'fact'.
Disciplinary Knowledge	Coding • Create programs that start with an event. • Control individual sprites using separate scripts. • Decompose tasks into smaller steps. • Test programs after each change. Online Safety • Discuss scenarios to explore both positive and negative impacts of using technology. • Identify and describe how thoughts and feelings change when using technology for different amounts of time. • Practise checking search results by comparing information from different sources. • Question whether images, news and videos are reliable or appropriate. • Sort, categorise and explain examples of information to determine what is 'personal' and why it should be protected. • Practise creating passwords, explaining how they are safe, secure and appropriate.	Coding • Combine movement, sound, and appearance in programs. • Write longer sequences of instructions. • Predict how instructions will run. • Debug errors caused by incorrect order or logic. Online Safety • Use a search engine to find information about me and/or somebody I know. • Use " " to narrow online searches. • Understand that I should check the images, news and video results as well as the regular search results. • Name 3 different places or people that I can go to if I am unsure if information is safe to share • Give examples of how bullying behaviour could appear online and how someone can get support. • Provide simple examples of where online bullying can take place and what it might look like.	Coding • Design interactive projects with multiple scripts. • Refine algorithms rather than replacing them. • Use testing to improve accuracy. • Explain how events make programs interactive. Online Safety • Use key phrases in search engines. • Explain how to choose the best suggestion. • Analyse information and differentiate between 'opinions', 'beliefs' and 'facts'. • Explain how to evaluate evidence to determine its credibility. • Identify how to get help from a trusted adult if needed. • Name 3 different contexts for buying and selling online. • Name and identify how somebody may feel if their online work is copied by somebody else without their permission.

Year Group	Year 4 Autumn	Year 4 Spring	Year 4 Summer
Learning Theme	**<u>Leading a Healthy Digital Life & Programming</u>** *Health, Wellbeing and Lifestyle* *Online Reputation* *Privacy and Security*	**<u>Being Safe Online & Programming</u>** Self-Image and Identity Online Relationships Online Bullying	**<u>Being Responsible Online & Programming</u>** Managing Online Information Copyright and Ownership
Substantive Knowledge	<u>Coding</u> • **Repetition, also known as loops, allows instructions to run more than once.** • Repetition reduces the need for repeated commands. • Programs can contain multiple scripts that run together. <u>Online Safety</u> • Others may search my name online to find information about themselves or somebody they know. • People may alter information or put untrue information about them online with or without their knowledge. • **The risks posed by over-sharing information online.** • **Reasons why internet use may be monitored.** • Monitoring services are used to keep children and users safe online. • What the digital age of consent is.	<u>Coding</u> • Programs can run simultaneously. • The structure of a program affects its behaviour. • Logical thinking helps predict program outcomes. • **Testing and debugging improve program accuracy.** <u>Online Safety</u> • **The issue of impersonation and how this can impact on my personal online reputation and relationships.** • Some of the motives behind online impersonation. • What it feels like to be safe online. • What is meant by respect. • Bullying behaviour can make someone feel upset, hurt or angry. • Someone may try to pretend they are not upset, hurt or angry online. • What are different types of media online. • **What you do online can affect or influence other people's feelings.** • I should not be mean online.	<u>Coding</u> • Programs can be made more efficient. • Repetition can be combined with events. • **Programs can be evaluated and refined.** • Clear structure makes programs easier to understand. <u>Online Safety</u> • What criteria must be met before something is a 'fact'. • **Why lots of people sharing the same opinions or beliefs online does not make those opinions or beliefs true.** • Ways of recognising who might own online content. • What 'reuse' means. • **What a 'bot' is and how they are used.** • How to get help from a trusted adult if needed. • Sellers use a range of techniques to advertise their brand/stock online. • Ways sellers advertise their brand/stock online.

Disciplinary Knowledge	Coding • Identify repeated patterns in programs. • Use repetition blocks to reduce code length. • Compare inefficient and efficient solutions. • Predict outcomes before running programs. Online Safety • Give examples of tech/online activities that effectively hold their attention and engagement. • Explore the value they place in different tech/online activities. • Recognise some of the limitations that tech/online activities may place on their attention. • Demonstrate an awareness of the effects of over engagement on physical health, wellbeing, relationships and work. • Identify times when someone might need to limit the amount of time they use technology. • Recognise and explain a range of strategies to limit time spent online/using tech. • Suggest appropriate strategies for keeping personal information private in different contexts. • Describe how some online services may seek consent to store information about me. • Know how to get help if I am unsure about consenting to an online service.	Coding • Create programs with scripts that run at the same time. • Observe how scripts interact. • Use logical reasoning to explain behaviour. • Debug programs through structured testing. Online Safety • Explain how my online identity can be different to the identity I present in 'real life'. • Explain the reasons for and against changing your identity online and explain how someone might do so. • Describe the right decisions about how I interact with others online and how this will impact on how others perceive me. • Give examples of when I have used or may have to use these in my online life. • Give examples of how online behaviour is either respectful or disrespectful. • Describe how it is possible to be respectful online. • Explain the different features of different media. • Simply describe what bullying online may look like on these different forms of media.	Coding • Review and improve programs for clarity and efficiency. • Combine repetition with events. • Evaluate programs against success criteria. • Justify improvements using computing vocabulary. Online Safety • Explain the difference between a 'belief', an 'opinion' and a 'fact' • Analyse information and differentiate between 'opinions', 'beliefs' and 'facts' • Identify different ways on how to get help from a trusted adult if needed. • Describe some of the methods used to encourage people to buy things online. • Describe techniques to recognise advertising. • Recognise some of these techniques when they appear online • Describe what is a 'bot'. • Explain how bots are used online (e.g. boost follower/retweet numbers, chat bot for help on a site, or as part of an app or game, impersonation)

Year Group	Year 5 Autumn	Year 5 Spring	Year 5 Summer
Learning Theme	**Leading a Healthy Digital Life & Programming** *Health, Wellbeing and Lifestyle* *Online Reputation* *Privacy and Security*	**Being Safe Online & Programming** Self-Image and Identity Online Relationships Online Bullying	**Being Responsible Online & Programming** Managing Online Information Copyright and Ownership
Substantive Knowledge	Coding • **Programs can make decisions using conditions.** • Selection allows different outcomes. • User input can affect how a program behaves. Online Safety • Simple properties of healthy sleep. • The concept of healthy sleep. • The relationship between the value of data and the ethics of collecting that data. • **App permissions allow access to our personal information.** • Apps request permission to access data and functions on a device. • The data we share is valuable to app developers. • Information found online may not be accurate. • People may make judgements against others on the information that they find. • **The benefits but also the risks of in-app purchases.** • The risks posed by not protecting accounts and information online. • **What a trusted source of online website/information looks like.**	Coding • Conditions control when instructions run. • **Programs can respond differently to different inputs.** • Logical operators support decision-making. • Programs combine sequence, repetition, and selection. Online Safety • Online identity can be shown in different ways. • **A person's online identity can have an impact on others, both positively and negatively.** • If someone is at risk of harm I need to tell a responsible adult. • **Communication online does not have to be text-based.** • A variety of communication methods have been developed specific to online communication - e.g., GIFS, memes. • The appropriate use of technology-specific communication depends on circumstance and context. • **The difficulties some people may have, including online.** • Know who to speak to if someone they know was being bullied online.	Coding • **Complex problems can be solved using structured algorithms.** • Programs can be tested and improved for reliability. • Clear logic makes programs easier to debug. • Decisions affect program flow. Online Safety • What 'fair dealing' situations are. • Some work is in the public domain • Copyrighted work can be used, if this use is fair. • **The difference between online misinformation (inaccurate information distributed by accident) and dis-information (inaccurate information deliberately distributed and intended to mislead).**

Disciplinary Knowledge	Coding • Create programs that respond to conditions or user input. • Use real-life examples to model conditional thinking. • Explain decisions within a program. Online Safety • Recount simple benefits of sleep on body's health. • Offer suggestions on how use of technology before sleep could affect quality of sleep. • Describe ways technology can affect health and well-being both positively. • Offer simple strategies to manage technology before bedtime. • Make a balanced judgement when researching information online. • Explain what in-app purchasing is. • Know that they should always ask permission when making an online purchase. • Suggest appropriate strategies for creating strong passwords and explain why these are effective. • Explain what a strong password is and demonstrate how to create one. • Suggest some reasons as to why apps/companies request access to personal data.	Coding • Combine selection with repetition and sequence. • Test programs using different inputs. • Debug decision-making errors. • Predict different outcomes based on conditions. Online Safety • Explain someone's online identity can be different to their identity in 'real life'. • Explain the positive reasons for changing your online identity and the negative reasons for doing so. • Explain some differences between online and offline bullying. • Know how to be an 'upstander' online. • Describe how what one person perceives as playful joking and teasing (including 'banter') might be experienced by others as bullying. • Explain how anyone can get help if they are being bullied online and identify when to tell a trusted adult. • Identify different support that is available to someone who is being bullied online. • Know how to block abusive users on the different platforms, apps and games that they use. • Understand how to report posts, images, videos and photos on the different platforms, apps and games that they use. • Describe what they can do to support others online, both friends and people I know less well.	Coding • Solve open-ended problems using structured algorithms. • Refine programs for reliability. • Explain how logic controls program flow. • Evaluate solutions for clarity and effectiveness. Online Safety • Use different search technologies. • Evaluate digital content and can explain how I make choices from search results. • Explain what is meant by 'being sceptical'. • Evaluate flawed reasoning.

Year Group	Year 6 Autumn	Year 6 Spring	Year 6 Summer
Learning Theme	**<u>Leading a Healthy Digital Life & Programming</u>** *Health, Wellbeing and Lifestyle* *Online Reputation* *Privacy and Security*	**<u>Being Safe Online & Programming</u>** Self-Image and Identity Online Relationships Online Bullying	**<u>Being Responsible Online & Programming</u>** Managing Online Information Copyright and Ownership
Substantive Knowledge	<u>Coding</u> • Large programs are made from smaller parts. • Abstraction removes unnecessary detail. • **Algorithms can be reused and adapted.** <u>Online Safety</u> • The simple properties and the concept of healthy sleep. • The benefits but also the risks of in-app purchases. • Permission should always be asked for when making an online purchase. • **What a trusted source of online information looks like, including websites.** • Information I find online (including in news articles, photos, and videos) may not be accurate. • People may make judgements against others on the information that they find. • **What the risks posed are by not protecting accounts and information online.** • Apps request permission to access data and functions on a device. • The relationship between the value of data and the ethics of collecting that data. • Data we share is valuable to app developers. • Differentiate between fact and fake information.	<u>Coding</u> • Programs can be evaluated for efficiency and effectiveness. • **Errors can be logical as well as technical.** • Improving programs may involve simplifying code. <u>Online Safety</u> • Show online identity in different ways. • Online identities can have an impact on others, both positively and negatively. • Communication online does not have to be text-based. • A variety of communication methods have been developed specific to online communication. • **Appropriate use of technology-specific communication depends on circumstance and context.** • Describe what is meant by 'harm'. • Not everyone you communicate with online is pleasant and may not have your best intentions at heart. • Difficulties some people may have online. • **How to report problems online.** • Names of reporting routes that a person could use or suggest to someone else. • If someone is at risk of harm, that person needs to tell a responsible and trusted adult. • **Bullying is different from banter.** • How to be an 'upstander' online.	<u>Coding</u> • Coding knowledge can be transferred to new contexts. • **Programs can be refined for specific audiences or purposes.** • Evaluating programs helps identify strengths and weaknesses. • Programming supports problem-solving across subjects. <u>Online Safety</u> • What 'fair dealing' situations look like. • Some work is in the public domain and even copyrighted work can be used, if this use is fair. • The difference between online misinformation. • Information seen online may be targeted based on my interests. • Some online content may be commercially promoted. • What is meant by content that is sponsored or boosted. • **Know what the term 'stereotype' means.** • Stereotypes may be reinforced online and can influence perceptions of others online. • Some influencers or vloggers are paid to promote items. • **Where content is sponsored, it is not always apparent.**

Disciplinary Knowledge	Coding • Break complex problems into smaller parts. • Identify essential and non-essential details. • Reuse and adapt existing algorithms. • Plan programs before coding. Online Safety • Recount simple benefits of sleep on body's health. • Offer suggestions on how use of technology before sleep could affect quality of sleep. • Describe ways technology can affect health and well-being both positively (e.g. mindfulness apps) and negatively. • Identify activities when using technology that could negatively impact on sleep. • Offer simple strategies to manage technology before bedtime. • Explain what in-app purchasing is (including loot boxes). • Make a balanced judgement when researching information online. • Explain how and why some apps and games may request or take payment for additional content. • Explain the importance of seeking permission from a trusted adult before purchasing. • Use a search engine to search for information about other people and present that information for others to read. • Suggest some reasons as to why apps/companies request access to personal data. • Explain how many free apps or services may read and share private information with others.	Coding • Analyse programs to identify inefficiencies or logical errors. • Compare multiple solutions. • Evaluate programs using clear criteria. • Simplify code where possible. Online Safety • Explain someone's online identity can be different to their identity in 'real life'. • Describe how someone might change their identity online and why. • Explain the positive reasons for changing your online identity and the negative reasons for doing so. • Demonstrate responsible choices about my online identity, depending on context. • Explain why some people choose to act in a certain way online and that it is their decision. • Give examples of the online (or offline) communities to which they belong. • Describe some of the positive things they do in these communities and can explain how their behaviour impacts on others. • Describe how online communities collaborate and the benefit of doing this. • Describe differences between online and offline bullying. • List different ways people can be hurtful to others online. • Describe what 'banter' is and how it differs from 'bullying'. • Name various people who you would speak to if someone they knew was being bullied online. • Identify different support that is available to someone who is being bullied online, including online services. • Know how to block abusive users on the different platforms, apps and games that they use. • Explain how to report posts, images, videos and photos on the different platforms, apps and games that they use. • Describe these processes to someone else.	Coding • Apply coding knowledge to new or cross-curricular contexts. • Adapt programs for different purposes or audiences. • Evaluate strengths and weaknesses. • Reflect on learning and next steps. Online Safety • Use different search technologies include voice activated devices. • Evaluate digital content and explain how to make choices from search results. • Explain what is meant by 'being sceptical'. • Evaluate flawed reasoning. • Explain why information I see online may be personalised. • Identify some of the methods used to get your attention online. • Describe how fake news may affect someone's emotions and behaviour and explain why this may be harmful. • Explain what is meant by a 'hoax'. • Explain why someone would need to think carefully before they share information (including beliefs and opinions) online. • Explain why some people will pretend something is true when it isn't. • Explain why someone would need to think carefully before they share.