Computing Progression Map through Key Stage 2 at

	Year 3	Year 4	Year 5	Year 6
Essential Skills **Age appropriate skills for the use of core devices and applications within their setting.**	To be more independent and are encouraged to attempt to fix a problem they may have before asking for help on their device. About different media and file types.	About physical input and output slots on a device. E.g. USB, HDMI, etc. About how to save their work in a range of locations. The best way to save their files. E.g. as an image (jpeg) to share online.	How to create a QR Code. About uploading work to a cloud or blog. Advanced techniques to tell a story using technology/ multiple apps. About advanced film making elements such as sound and lighting.	About collaboration and sharing documents with other children in order to create digital content. Advanced features of common office/ classroom apps.
Computer Science – Computational Thinking **Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.**	To create a detailed flow diagram using the correct symbols. To turn an algorithm into a simple program on a digital device. About testing the program and recognising when it needs to be debugged.	To design a simple algorithm to show a real- life situation. About the valuable skills of abstraction and decomposition when tackling more complex problems.	To explore problem solving and decomposition. To independently plan, write and test their algorithms and create more complex programs, debugging as needed. About controlling / simulating physical systems and using sensors with multiple outcomes.	To create complex algorithms and turn their designs into a program (incorporating variables, procedures and different forms of input and output). **In Year 6, we are very fortunate to have Everton in the Community coming in to teach a topic of Computer Science as part of their E-Steam project.**
Computer Science – Coding **Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.**	To create their own sprite in Scratch/ Scratch Jr. About sequencing commands and adding a repeat command in a program. How to refine/ improve a program by using the repeat command. How to create a variable. To create a program that contains selection, inputs and outputs.	About the structure of a program and learn to plan in logical, achievable steps. To write a complex program, incorporating features such as selection, inputs, repetition, variables and procedures. Attempt to debug their own programs and corrects/ debugs errors in code.	To create their own complex game within Scratch or other block-based coding app that uses variables, event handling, selection (“If” and “Then”), procedures and repetition (loops) to increase programming possibilities.	About complex programs and are encouraged to persevere when solving difficult problems even if the solution is not obvious. About executing and adapting common commands using a text-based language e.g. Python/Javascript/ SwiftPlayground.

<u>Computer Science – Logical Reasoning</u> **Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.**	About using logical reasoning to detect potential problems in an algorithm or program which could result in something going wrong and then offer ideas of what is needed to fix/ debug it.	To recognise an error in an existing program and attempt to debug/ fix the program. To investigate existing programs, evaluating them and consider how they could be improved.	To explore logical reasoning in greater depth and learn to give wellthought-through explanations of any errors they identify in program code (using the correct terminology).	To independently use logical reasoning to detect and correct errors in an algorithm and program. That there is often more than one way to solve a problem in an algorithm or program.
<u>Computer Science – Networking</u> **Understand computer networks including the internet; how they can provide multiple services, such as the World Wide Web.**	The World Wide Web is only one part of the Internet, the part that contains websites. To send an email and understands how this works. How information travels through computer networks.	About the key services that can be used to communicate on the internet. To recognise the main components (hardware) which allow computers to join and form a network.	About software, hardware and types of connected computers. About how data travels via the internet including binary. more about the different parts of the Internet and services. To create a basic web page using HTML.	In more detail about how information/data is transported on the Internet and between computers using packets and IP addresses. About the opportunities computer networks and the internet offer for communication and collaboration.
<u>Computer Science – Online</u> **Appreciate how [search] results are selected and ranked.**	About key words. That search engines try to put the most useful websites at the top.	That search engines use algorithms to sort websites.	Key skills for using a search engine. About the settings that can alter your search results.	To explore advanced features within search engines and learn to use them effectively. How search results are selected and ranked by algorithms.
<u>Information Technology – Harnessing Technology</u> **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**	To create digital content using a range of mixed tools/media and how to improve its design. To be creative and independent while using unfamiliar apps or technology to create content. To create a plan/ storyboard when producing digital content. to design a simple questionnaire to collect information, and display the information in a graph or table.	To produce documents, media and presentations with increasing independence and competency that present data/ information. To use a keyboard confidently and make use of tools such as a spellchecker. About new forms of technology E.g. AR, Virtual Reality, Wearable Technology etc.	To produce digital content in a given format e.g. podcasts, videos, AR, virtual reality, 3D, digital music or illustrations. About planning including elements that they may need to source from other services. To build on the skills they have already developed to create content using unfamiliar technology. To use a spreadsheet / database to collect, record	To create digital storyboards with a complete narrative of the project or investigation. To confidently identify the potential of unfamiliar technology to increase their creativity. To source, store and combine copyright free images from the internet. To independently select, use and combine the appropriate technology/app tools to create

presenting data and information. * * In addition see the "I know how to" big digital skills statements which provide a simple progression of digital skills from reception to year 6. The document links to the Knowsley CLCs computing scheme of work.	To add information to a database.		data and to use simple formulae.	effects that will have an impact on others and tell a story.
<u>Information Technology – Online</u> **Use search technologies effectively.**	That the top search results can be manipulated and are based on things like most popular, recently updated. About filtering results by adding more detail or using advanced tools. To use search engines to collect information.	To search for and use information from a range of sources. About making notes from information found on websites to present their findings. That not all sources of information including websites are accurate and can check information using a different sites.	To use complex searches and advanced tools to find, select and use information. Check the reliability of information on the internet.	To use complex searches, filters and advanced tools to find, select and use information
<u>Digital Learning – Technology in the Real World</u> **Understand the opportunities [networks] offer for communication and collaboration.**	That the internet is a computer network. That the internet can provide multiple services, such as the world wide web, streaming music/ video and email. Explore a web sites journey from first request to appearing on the screen. To learn advanced web terminology e.g. URL.	To differentiate between apps that use the Internet, the school network or that are self-contained on a device. To use computing to communicate and collaborate. About documents and methods of collaboration over the internet e.g. blog.	About different online communication tools/apps and how they could be used for different purposes e.g. work and social. About working in a group using collaborative tools.	About digital crimes and threats that might exist online. E.g. worms, trojans, viruses, spyware, ransomware and malware. About anti-virus software and how they can help protect devices from infection. Advanced web terminology e.g. firewall, security updates, pop up blocker, scams, phishing, HTTPs, location based settings, in app purchasing, trolling, filtering etc.

<u>Digital Learning – Media & Content</u> **Be discerning in evaluating digital content.**	How to make judgements about the usefulness and accuracy of information. About the term 'fake news'. about what copyright is and why we have copyright laws. To recognise copyright material.	More about what Fake News is, it's purpose and that Fake News can be found on all media. How to identify Fake News. That data can be manipulated to make Fake News appear to be true.	About how and why information found on some sites will be biased. How to source copyright free materials to use in their digital projects. How to credit the use of websites in their work and why this should be done.	To explore in more depth the legal and moral reasons not to plagiarise or infringe copyright and the impact it can have on the creator of the content.
<u>Digital Learning – Online Safety</u> **Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.** **<u>Each year group completes a topic which ensure we meet the requirements of KCSIE.</u>**	The SMART rules about using the internet safely and responsibly. What personal information is and what they shouldn't be sharing. They should pause before posting and consider the potential consequences. Who they should seek help from about online concerns. The correct and sensible choice when presented with hypothetical scenarios. How to send and reply to online messages, such as email, respectfully and understand the difference between online and face-to-face. How to use the safety features of websites as well as reporting concerns to an adult they trust. What online bullying/ cyberbullying is and some of the forms it can take. How to report any concerns and who they consider a trusted adult.	The SMART rules about using the internet safely and responsibly. What personal information is and what they shouldn't be sharing. They should pause before posting and consider the potential consequences. Who they should seek help from about online concerns. The correct and sensible choice when presented with hypothetical scenarios. How to send and reply to online messages, such as email, respectfully and understand the difference between online and face-to-face. How to use the safety features of websites as well as reporting concerns to an adult they trust. What online bullying/ cyberbullying is and some of the forms it can take. How to report any concerns and who they consider a trusted adult.	To demonstrate and explain the importance of communicating kindly and respectfully. About the negative online behaviours such as bullying, trolling, griefing and harassment. About empathy and the effects of online bullying. anything they post online can be seen, re-shared, re-used and may have a negative effect on others. About the 'Digital 5 a Day' plan and that they need to have a balanced approach to their use of technology. What makes a secure username and password. Why people set up fake accounts or copy others identities. What an online identity or internet persona is, e.g. social identity in online communities and websites (Facebook, Instagram, YouTube etc) including photos and posts.	The advice they should/would give friends about making good choices online. The consequences of making poor online choices. E.g. Online bullying, Inappropriate comments (racially or sexually orientated), uploading inappropriate material (adult / illegal / antisocial), accessing inappropriate sites (anti-social or illegal behaviour / adult content) and breaching copyright laws. The way men and women can be stereotyped in movies and TV. When to seek help from a trusted adult and not to try and deal with online situations on their own. How to block and report inappropriate comments or behaviour online. How to maintain healthy positive relationships with others while online. Behaviours and strategies to prevent and stop online bullying.

	They need to have a balanced approach to their use of technology. To make good choices about how long they spend online. To recognise websites and games appropriate for their age. E.g. PEGI rating. Online accounts need to be signed in to and why passwords should never be shared. What makes a secure password and why they are important. How to use a password security checking tool. What represents an online identity E.g. images, username, information shared and digital footprint. To post positive comments online.	They need to have a balanced approach to their use of technology. To make good choices about how long they spend online. To recognise websites and games appropriate for their age. E.g. PEGI rating. Online accounts need to be signed in to and why passwords should never be shared. What makes a secure password and why they are important. How to use a password security checking tool. What represents an online identity E.g. images, username, information shared and digital footprint. To post positive comments online.	How to avoid being tricked by scammers online. E.g. Phishing emails. The child can explain why an app may be free but have in-app purchasing and what that is.	The child knows and can list the websites and agencies they can contact in case they need help. What steps they can take to create a 'positive online image' including defining acceptable and unacceptable online behaviour and the benefits this will have to them now and in the future