Information Technology

National Curriculum		Year 3	Year 4	Year 5	Year 6
2.6 **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.**	**Content Design**	• Show that page orientation can be changed. • Add and edit text in a place holder. • Choose fonts and apply effects to text. • Organize text and image placeholders in a page layout. • Add and remove images to and from placeholders. • Move, resize and rotate images. • Review a document.	• Use text, images and objects from a range of sources in cross-curricular opportunities to consolidate and expand upon previous learning. • Use and select fonts and effects for an audience and purpose. • Confidently use text shortcuts such as: cut, copy and paste to organize text. • Use spell check and thesaurus to review digital text.	• Use text, images and objects from a range of sources in cross-curricular opportunities to consolidate and expand upon previous learning. • Use hyperlinks and other useful effects to documents. • Use previous learning to become increasingly confident in creating and organizing digital content for different purposes and audiences.	• Add text to a web page • Change the appearance and position of text on a webpage. • Add images and other content to a webpage. • Preview a page (different screen sizes) • Add additional pages • Insert hyperlinks between pages • Insert hyperlinks to another site to embed content

	Images				
		• Use a computer/device to create an animation. • Set up a device to capture stop frame photos and capture a series of images. • Move a subject between captures using tools to review position. • Play and review a sequence of images. • Improve an animation by removing images and adding other media. • Export, playback and review an animation/film.	• Digitally manipulate an entire image by adjusting colours, applying filters and adding effects. • Digitally manipulate parts of an image using retouching tools. • Change the composition of an image using: rotation, flip, crop and cut tools. • Add text, drawing and borders to an image. • Consider why images may be manipulated and the impact this may have.	• Create graphical objects on a computer screen by selecting and adding: shapes, lines and text to a drawing. • Select, drag, duplicate and delete an object on the page. • Modify an object using tools such as: reposition, rotate, resize and recolour. • Select, group, modify and change the layers of multiple objects. • Consider the effect of using and combining multiple modification tools.	• Create 3D graphical objects on a computer screen using select, duplicate and delete tools • Alter the view of the 3D space • Place a 3D object in a 3D space • Modify a 3D object using tools such as: reposition, rotate, resize and recolour. • Select, group, modify and change the layers of multiple 3D objects. • Recognise that blank objects must be used as placeholders to create holes • Recognise the role of scale in design

Video and Sound	• Add sound to an animation. • Export a series of images as a video file.	• Use a device to record sound. • Recognise that recorded sound is stored as a file. • Select/delete a section of audio. • Apply effects, including layering sounds, to a section of audio. • Export, playback and review an audio file. • Consider the results of editing choices.	• Use a device to record video. • Use and consider composition techniques to create specific effect when recording video. • Locate and playback a video file. • Select/delete a section of video. • Apply effects to a section of video. • Export, playback and review a video file.	• Use cross-curricular opportunities to consolidate previous learning.

Data				
	• Retrieve information from different levels of the branching database • Create questions with yes/no answers	• Use digital devices to collect data automatically. • Recognise input devices (such as sensors) that can be used for data collection. • Explain the role of a data logger. • Make decisions on the collection of data (such as regularity) • Use a computer program to sort data by one attribute.	• Navigate a flat-file database. • Design a structure for a flat-file database. • Choose different ways to view data. • Ask questions that need more than one attribute to answer and choose which attribute to sort data by to answer a given question. • Choose multiple criteria to search data to answer a given question (AND and OR) • Select an appropriate graph to visually compare data • Choose suitable ways to present information to other people	• Understand how some questions can be answered using data. • Explain that computers deal with different data types in different ways • Create a spreadsheet for a purpose. • Explain that formulas can be used to produce calculated data • Recognise that data can be calculated using different operations • Recognise that changing inputs also changes outputs • Apply formulas to data, including duplication • Evaluate results in comparison to the question asked • Choose suitable ways to represent data

Computer Science

National Curriculum	Year 3	Year 4	Year 5	Year 6
2.1 **Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.**	• Create a sequence of commands using a block language to produce a given outcome • Work with others to decompose a problem into smaller steps in planning a project • Debug errors to accomplish a specific goal.	• Plan a program that includes appropriate loops to produce a given outcome • Independently decompose a problem into smaller steps in planning a project. • Debug errors in increasingly complex programs to accomplish specific goals.	• Plan a program which includes selection to produce a given outcome. • Utilise a microcontroller (crumble) and connect and program components (including output devices — LEDs and motors) through the application of existing programming knowledge • Plan a solution to a problem using decomposition. • Debug errors in increasingly complex programs to accomplish specific goals.	• Plan a program which includes variables to produce a given outcome. • Utilise a physical device (micro:bit) to apply knowledge of programming constructs to produce a given outcome. • Solve complex problems using decomposition. • Debug errors in increasingly complex programs to accomplish specific goals.

2.2 **Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.**	• Explain what a sequence is. • Recognise that sequences can have an order. • Explain the order (sequence) of commands can affect the outcome (same commands, different order -> same or different outcome) • Identify that different sequences can achieve the same outcome	• List an everyday task as a set of instructions including repetition • Use an indefinite loop to produce a given outcome • Use a count-controlled loop to produce a given outcome • Recognise tools that enable more than one process to be run at the same time (concurrency) • Create two or more sequences that run at the same time	• Define that conditional statements are used in computer programs • Experiment with a 'repeat until' loop • Use a condition in an 'if... then...' statement to produce a given outcome • Show that a condition can switch program flow in one of two ways • Explain that a loop can stop when a condition is met, eg number of times, event	• Define 'variable' as something that is changeable • Explain that a variable has a name and a value. • Identify and experiment using a variable in an existing program • Decide where in a program to set a variable • Update a variable with a user input / and event • Use a variable in a conditional statement to control the flow of a program • Use the same variable in more than one location in a program
2.3 **Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.**	• Explain simple sequence-based algorithms independently. • Use logical reasoning to detect errors in programs.	• Explain an algorithm using sequence and repetition independently. • Use logical reasoning to detect and correct errors in programs.	• Explain an algorithm using sequence, repetition and selection independently. • Use logical reasoning to detect errors in increasingly complex programs.	• Concisely explain algorithms using sequence, repetition, selection and variables independently. • Use logical reasoning to detect and correct errors in increasingly complex programs.

2.4 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.				
	• Identify input and output devices. • Explain that digital devices accept an input and process it to produce an output • Explain how a computer network can be used to share information. • Explain the role of a switch, server, and wireless access point in a network • Identify network devices around me • Explain how networks can be connected to other networks	• Describe how networks physically connect to other networks. • Explain that the global interconnection of network is the Internet • Recognise that the World Wide Web is part of the Internet • Describe how content can be added and accessed on the World Wide Web • Recognise how the content of the WWW is created and shared by people • Explain the benefits/limitations of the World Wide Web	• Understand that computers can be connected together to form systems. • Recognise that computers communicate with other devices. • Recognise how information is transferred across the internet. • Explain that data is transferred in packets • Recognise the role of computer systems in our lives. • Understand that connections between computers allow for sharing of stored files, collaboration and sharing of different media. • Contribute to a shared project and evaluate ways of working together online.	• Identify different ways to communicate without technology. • List methods of communicating using the internet • Choose an appropriate method of internet communication for a given purpose • Evaluate different methods of online communication • Explain which types of media can be shared through the internet • Classify internet communication by messenger and recipient/audience.

Digital Literacy

National Curriculum	Year 3	Year 4	Year 5	Year 6
2.5 **Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content** **2.7** **Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact**	Please refer to the Online Safety Skills Progression below (Education For A Connected World). Skills are blended through the Computing, PSHE/RSE and wider curriculums.			

Online Safety Skills Progression below (Education For A Connected World)

		Year 3	Year 4	Year 5	Year 6
Online Safety	Self-Image and Identity	• I can explain what is meant by the term 'identity'. • I can explain how people can represent themselves in different ways online. • I can explain ways in which someone might change their identity depending on what they are doing online (e.g. gaming; using an avatar; social media) and why.	• I can explain how my online identity can be different to my offline identity. • I can describe positive ways for someone to interact with others online and understand how this will positively impact on how others perceive them. • I can explain that others online can pretend to be someone else, including my friends, and can suggest reasons why they might do this.	• I can explain how identity online can be copied, modified or altered. • I can demonstrate how to make responsible choices about having an online identity, depending on context.	• I can identify and critically evaluate online content relating to gender, race, religion, disability, culture and other groups, and explain why it is important to challenge and reject inappropriate representations online. • I can describe issues online that could make anyone feel sad, worried, uncomfortable or frightened. I know and can give examples of how to get help, both on and offline. • I can explain the importance of asking until I get the help needed.

Online Relationships				
	• I can describe ways people who have similar likes and interests can get together online. • I can explain what it means to 'know someone' online and why this might be different from knowing someone offline. • I can explain what is meant by 'trusting someone online', why this is different from 'liking someone online', and why it is important to be careful about who to trust online including what information and content they are trusted with. • I can explain why someone may change their mind about trusting anyone with something if they feel nervous, uncomfortable or worried. • I can explain how	• I can describe strategies for safe and fun experiences in a range of online social environments (e.g. livestreaming, gaming platforms). • I can give examples of how to be respectful to others online and describe how to recognise healthy and unhealthy online behaviours. • I can explain how content shared online may feel unimportant to one person but may be important to other people's thoughts feelings and beliefs.	• I can give examples of technology-specific forms of communication (e.g. emojis, memes and GIFs). • I can explain that there are some people I communicate with online who may want to do me or my friends harm. I can recognise that this is not my / our fault. • I can describe some of the ways people may be involved in online communities and describe how they might collaborate constructively with others and make positive contributions. (e.g. gaming communities or social media groups). • I can explain how someone can get help if they are having problems and identify when to tell a trusted adult.	• I can explain how sharing something online may have an impact either positively or negatively. • I can describe how to be kind and show respect for others online including the importance of respecting boundaries regarding what is shared about them online and how to support them if others do not. • I can describe how things shared privately online can have unintended consequences for others. e.g. screen-grabs. • I can explain that taking or sharing inappropriate images of someone (e.g. embarrassing images), even if they say it is okay, may have an impact for the sharer and others; and who

		someone's feelings can be hurt by what is said or written online. • I can explain the importance of giving and gaining permission before sharing things online; how the principles of sharing online is the same as sharing offline e.g. sharing images and videos.		• I can demonstrate how to support others (including those who are having difficulties) online.	can help if someone is worried about this.
	Online Reputation	• I can explain how to search for information about others online. • I can give examples of what anyone may or may not be willing to share about themselves online. I can explain the need to be careful before sharing anything personal. • I can explain who someone can ask if they are unsure about putting something online.	• I can describe how to find out information about others by searching online. • I can explain ways that some of the information about anyone online could have been created, copied or shared by others.	• I can search for information about an individual online and summarise the information found. • I can describe ways that information about anyone online can be used by others to make judgments about an individual and why these may be incorrect.	• I can explain the ways in which anyone can develop a positive online reputation. • I can explain strategies anyone can use to protect their 'digital personality' and online reputation, including degrees of anonymity.

| Online Bullying | • I can describe appropriate ways to behave towards other people online and why this is important.

• I can give examples of how bullying behaviour could appear online and how someone can get support. | • I can recognise when someone is upset, hurt or angry online.

• I can describe ways people can be bullied through a range of media (e.g. image, video, text, chat).

• I can explain why people need to think carefully about how content they post might affect others, their feelings and how it may affect how others feel about them (their reputation). | • I can recognise online bullying can be different to bullying in the physical world and can describe some of those differences.

• I can describe how what one person perceives as playful joking and teasing (including 'banter') might be experienced by others as bullying.

• I can explain how anyone can get help if they are being bullied online and identify when to tell a trusted adult.

• I can identify a range of ways to report concerns and access support both in school and at home about online bullying.

• I can explain how to block abusive users.

• I can describe the helpline services which can help people experiencing bullying, | • I can describe how to capture bullying content as evidence (e.g screen-grab, URL, profile) to share with others who can help me.

• I can explain how someone would report online bullying in different contexts.

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			and how to access them (e.g. Childline or The Mix).	
Managing Online Information	• I can demonstrate how to use key phrases in search engines to gather accurate information online. • I can explain what autocomplete is and how to choose the best suggestion. • I can explain how the internet can be used to sell and buy things. • I can explain the difference between a 'belief', an 'opinion' and a 'fact. and can give examples of how and where they might be shared online, e.g. in videos, memes, posts, news stories etc. • I can explain that not all opinions shared may be accepted as true or fair by others (e.g. monsters under the	• I can analyse information to make a judgement about probable accuracy and I understand why it is important to make my own decisions regarding content and that my decisions are respected by others. • I can describe how to search for information within a wide group of technologies and make a judgement about the probable accuracy (e.g. social media, image sites, video sites). • I can describe some of the methods used to encourage people to buy things online (e.g. advertising offers; in-app purchases, pop-ups) and can recognise some of these when they appear online.	• I can explain the benefits and limitations of using different types of search technologies e.g. voice-activation search engine. I can explain how some technology can limit the information I am presented with. • I can explain what is meant by 'being sceptical'; I can give examples of when and why it is important to be 'sceptical'. • I can evaluate digital content and can explain how to make choices about what is trustworthy e.g. differentiating between adverts and search results. • I can explain key concepts including: information, reviews,	• I can explain how search engines work and how results are selected and ranked. • I can explain how to use search technologies effectively. • I can describe how some online information can be opinion and can offer examples. • I can explain how and why some people may present 'opinions' as 'facts'; why the popularity of an opinion or the personalities of those promoting it does not necessarily make it true, fair or perhaps even legal. • I can define the terms 'influence',

		bed). • I can describe and demonstrate how we can get help from a trusted adult if we see content that makes us feel sad, uncomfortable, worried or frightened.	• I can explain why lots of people sharing the same opinions or beliefs online do not make those opinions or beliefs true. • I can explain that technology can be designed to act like or impersonate living things (e.g. bots) and describe what the benefits and the risks might be. • I can explain what is meant by fake news e.g. why some people will create stories or alter photographs and put them online to pretend something is true when it isn't.	fact, opinion, belief, validity, reliability and evidence. • I can identify ways the internet can draw us to information for different agendas, e.g. website notifications, pop-ups, targeted ads. • I can describe ways of identifying when online content has been commercially sponsored or boosted, (e.g. by commercial companies or by vloggers, content creators, influencers). • I can explain what is meant by the term 'stereotype', how 'stereotypes' are amplified and reinforced online, and why accepting 'stereotypes' may influence how people think about others. • I can describe how fake news may affect someone's emotions and behaviour, and	'manipulation' and 'persuasion' and explain how someone might encounter these online (e.g. advertising and 'ad targeting' and targeting for fake news). • I understand the concept of persuasive design and how it can be used to influences peoples' choices. • I can demonstrate how to analyse and evaluate the validity of 'facts' and information and I can explain why using these strategies are important. • I can explain how companies and news providers target people with online news stories they are more likely to engage with and how to recognise this. • I can describe the difference between online misinformation

				explain why this may be harmful. • I can explain what is meant by a 'hoax'. I can explain why someone would need to think carefully before they share.	and dis-information. • I can explain why information that is on a large number of sites may still be inaccurate or untrue. I can assess how this might happen (e.g. the sharing of misinformation or disinformation). • I can identify, flag and report inappropriate content.
	Health, Well-being and Lifestyle/	• I can explain why spending too much time using technology can sometimes have a negative impact on anyone; I can give some examples of both positive and negative activities where it is easy to spend a lot of time engaged. • I can explain why some online activities have age restrictions, why it is important to follow them and know who I can talk to if others pressure me to watch or do something online	• I can explain how using technology can be a distraction from other things, in both a positive and negative way. • I can identify times or situations when someone may need to limit the amount of time they use technology e.g. I can suggest strategies to help with limiting this time.	• I can describe ways technology can affect health and well-being both positively (e.g. mindfulness apps) and negatively. • I can describe some strategies, tips or advice to promote health and wellbeing with regards to technology. • I recognise the benefits and risks of accessing information about health and well-being online and how we should balance this	• I can describe common systems that regulate age-related content (e.g. PEGI, BBFC, parental warnings) and describe their purpose. • I recognise and can discuss the pressures that technology can place on someone and how / when they could manage this. • I can recognise features of persuasive design and how they are used to keep users engaged (current and

		that makes me feel uncomfortable (e.g. age restricted gaming or web sites).		• with talking to trusted adults and professionals. • I can explain how and why some apps and games may request or take payment for additional content (e.g. in-app purchases, lootboxes) and explain the importance of seeking permission from a trusted adult before purchasing.	future use). • I can assess and action different strategies to limit the impact of technology on health (e.g. night-shift mode, regular breaks, correct posture, sleep, diet and exercise).
	Privacy and Security	• I can describe simple strategies for creating and keeping passwords private. • I can give reasons why someone should only share information with people they choose to and can trust. I can explain that if they are not sure or feel pressured then they should tell a trusted adult. • I can describe how connected devices can collect and share anyone's information	• I can describe strategies for keeping personal information private, depending on context. • I can explain that internet use is never fully private and is monitored, e.g. adult supervision. • I can describe how some online services may seek consent to store information about me; I know how to respond appropriately and who I can ask if I am not	• I can explain what a strong password is and demonstrate how to create one. • I can explain how many free apps or services may read and share private information (e.g. friends, contacts, likes, images, videos, voice, messages, geolocation) with others. • I can explain what app permissions are and can give some examples.	• I can describe effective ways people can manage passwords (e.g. storing them securely or saving them in the browser). • I can explain what to do if a password is shared, lost or stolen. • I can describe how and why people should keep their software and apps up to date, e.g. auto updates. • I can describe simple ways to increase privacy on apps and

		• I know what the digital age of consent is and the impact this has on online services asking for consent.		services that provide privacy settings. • I can describe ways in which some online content targets people to gain money or information illegally; I can describe strategies to help me identify such content (e.g. scams, phishing). • I know that online services have terms and conditions that govern their use.
Copyright and Ownership	• I can explain why copying someone else's work from the internet without permission isn't fair and can explain what problems this might cause.	• When searching on the internet for content to use, I can explain why I need to consider who owns it and whether I have the right to reuse it. • I can give some simple examples of content which I must not use without permission from the owner, e.g. videos, music, images.	• I can assess and justify when it is acceptable to use the work of others. • I can give examples of content that is permitted to be reused and know how this content can be found online.	• I can demonstrate the use of search tools to find and access online content which can be reused by others. • I can demonstrate how to make references to and acknowledge sources I have used from the internet.