



Devonshire Primary Academy Computing Policy



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Adopted by Governors/HT: HT
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Computing Policy and Guidelines

1. Aims and objectives

1.1 Computing is changing the lives of everyone. Through teaching Computing, we equip children to participate in a rapidly-changing world where work and leisure activities are increasingly transformed by technology. We enable them to find, explore, analyse, exchange and present information. We also focus on developing the skills necessary for children to be able to use information in a discriminating and effective way. Computing skills are a major factor in enabling children to be confident, creative and independent learners.

1.2 The aim is to produce learners who are confident and effective users of technology at Devonshire Primary Academy we seek to achieve this aim by enabling children:

- to develop capability in finding, selecting and using information;
- to use technology for effective and appropriate communication;
- to monitor and control events both real and imaginary;
- to apply hardware and software to creative and appropriate uses of information;
- to apply their technological skills and knowledge to their learning in other areas, individually and collaboratively;
- to use their technological skills to develop their language and communication skills;
- to explore their attitudes towards technology and its value to them and society in general. For example, to learn about issues of security, confidentiality and accuracy.
- to deliver the requirements of the National Curriculum as comprehensively as possible and encouraging all children to achieve the highest possible standards of attainment.
- to challenge themselves and share their expertise and talents with others. To inspire and enthuse.

2. Teaching and learning style

2.1 As the aims of Computing are to equip children with the skills necessary to use technology to become independent learners, the teaching style that we adopt is as active and practical as possible. At times we do give children direct instruction on how to use hardware or software in 'skills' lessons but we often use technological capabilities to support teaching across the curriculum. Children who are learning science might use the computer to model a problem or to analyse data. We encourage the children to explore ways in which the use of technology can improve their results, for example, how a piece of writing can be edited or how the presentation of a piece of work can be improved by moving text about etc. We actively encourage pupils to choose how best to present their work, relevant to their audience, whether that be text, video, animation, green screen or digital music.

2.2 We recognise that all classes have children with widely differing abilities. This is especially true when some children have access to equipment at home, while others do not. We provide suitable learning opportunities for all children by matching the challenge of the task to the ability and experience of the child. We achieve this in a variety of ways, by:

- using a computer for whole class/group demonstrations;
- setting common tasks which are open-ended and can have a variety of responses;
- setting tasks of increasing difficulty (not all children complete all tasks);
- grouping children by ability in the room and setting different tasks for each ability group;

- pairing mixed ability children together to enable the sharing of different experiences;
- providing resources of different complexity that are matched to the ability of the child;
- children feeding back to the class on findings, outcomes of research, etc.;
- using classroom assistants to support the work of individual children or groups of children.

3. Computing curriculum planning

3.1 The school has developed a scheme of work for Computing as the basis for its curriculum planning. This scheme ensures all areas of the National curriculum are taught in a planned, coherent way, ensuring skills are taught to address the needs of our children.

3.2 Computing is taught with each year group focussing on a specific strand each term. This allows children to build on prior learning in a progressive way. The strands are:

- Algorithms
- Computational Thinking
- Problem Solving
- Networks: Knowledge and understanding
Networks: Using and Applying
- Digital Literacy: Knowledge and understanding
Digital Literacy: Using and Applying
- Data: Knowledge and Understanding
Data: Using and Applying

Each strand is taught once a year with the whole school focussing on the same strand at the same time, allowing progression to be monitored.

Vocabulary is central to our teaching and is planned to develop progression and is age appropriate.

3.3 From years 3-6, children will be developing an awareness of key figures in Computer Sciences. We feel it is important to develop aspirations and an appreciation for inspirational figures who have helped shape our past, present and future.

Year 3 – Charles Babbage

Year 4 – Tim Berners-Lee

Year 5 - The ENIAC Women

Year 6 - Alan Turing

3.4 E-safety is taught in a sequenced and progressive way, building on prior knowledge and addressing subjects ranging from password safety to positive self-image.

3.5 The class teacher is responsible for ensuring the short-term plans are adapted and effective for their own class. These plans will list the specific learning objectives of each lesson. The class teacher keeps these individual plans and s/he and the subject leader discuss their strengths and areas for improvement on an informal basis. Planning is also monitored by the Computing Curriculum group on a bi-annual basis.

3.6 The topics studied in Computing are planned to build upon prior learning. While we offer opportunities for children of all abilities to develop their skills and knowledge in each unit, we also build planned progression into our scheme of work, so that the children are increasingly challenged as they move up through the school.

3.7 Staff are encouraged to be as creative in their approach to Computing as possible. At Devonshire Primary Academy we aim to offer a range of experiences to all pupils during their time with us. Staff are encouraged to allow time for pupils to consolidate their skills in other

curriculum areas.

4. The contribution of IT to teaching in other curriculum areas

4.1 Technology contributes to teaching and learning in all curriculum areas. For example, graphics work links in closely with work in art, and work using databases supports work in mathematics, while the Internet proves very useful for research in humanities subjects such as history and geography. Technology enables children to present their information and conclusions in the most appropriate way.

4.2 English

Technology is a major contributor to the teaching of English. Through the development of keyboard skills and the use of computers, children learn how to edit and revise text, including their own work. They have the opportunity to develop their writing skills by communicating with other people, and they are able to join in discussions with other children. They learn how to improve the presentation of their work by using publishing software.

Pupils are also given opportunities to record their verbal work using voice recording apps and software, present their work in front of green screens or through stop motion animation.

4.3 Mathematics and Science

Many Technology activities build upon the mathematical and scientific skills of the children. Children can use technology in mathematics and science to collect data, make predictions, analyse results, and present information graphically. They also acquire measuring techniques involving positive and negative numbers, including numbers with decimal places. The internet plays a vital role in researching scientific concepts and also aids recording of experiments for evidence through video and photography.

4.4 Personal, social and health education (PSHE) and citizenship

Technology makes a contribution to the teaching of PSHE and citizenship as children learn to work together in a collaborative manner. They develop a sense of global citizenship by using the Internet and e-mail. Through the discussion of moral issues related to electronic communication, children develop a view about the use and misuse of technology. They also gain a knowledge and understanding of the interdependence of people around the world. E-Safety is also taught through PSHE, where children are reminded of the personal and social risks that can face them online. We also encourage children to make choices in their behaviour and internet use, choosing to report dangers or unacceptable behaviour if they encounter it, without feeling to blame.

5. Teaching Computing to children with special needs

5.1 At Devonshire Primary Academy, we teach Computing to all children, whatever their ability. We provide learning opportunities that are matched to the needs of children with learning difficulties. In some instances, the use of technology has a considerable impact on the quality of work that children produce; it increases their confidence and motivation. When planning work in Computing, we can take into account the targets in the children's Individual Education Plans (IEPs). The use of technology can help children in achieving their targets and progressing in their learning.

6. Assessment and recording

6.1 Teachers assess children's work in Computing by making informal judgements as they observe them during lessons. Pupils' progress is monitored by the class teacher. When

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appropriate, pupils print out work, although children can also save their work onto their own files on the 'classroom share' file of the school intranet. It is proposed to move to a cloud based e-profile as soon as this has been secured and tested.

6.2 The Computing subject leader keeps samples of the children's work in a portfolio. This demonstrates the expected level of achievement in Computing for each age group in the school. The children's work can also be accessed through the 'classroom share' file on the school intranet.

6.3 Currently, a Computing assessment document, which will be used to level children's Computing ability, is being trialled within the school. We envisage this document to be used throughout the school by the start of the next academic year.

7. E-safety (also see E-safety policy)

7.1 E-safety is taught from Foundation stage to year 6 in a planned sequence and progressive way. It is also taught as incidents or questions are raised that concern safety online.

7.2 E-safety topics are identified on the curriculum matrix to ensure they are taught effectively.

7.3 The E-safety group consists of pupils, staff, governors and community members to ensure a broad and all-encompassing approach is adopted. They meet regularly to assess what the academy does well and what it must do to improve.

7.4 Staff are asked to register children for E-safety lessons so any children who miss the session can be identified and work can be done to ensure all children receive the important information.

7.5 Parents are given regular updates on E-safety via leaflets and school website. They are regularly encouraged to report any apps or websites that they feel their children are accessing at home and they feel are 'not suitable', these will then be dealt with in accordance with the E-safety policy.

7.6 Devonshire Primary Academy use 360 Degree Safe (www.360safe.org.uk) as a self-review resource. We constantly update and work on our action plan, striving to achieve the accreditation for e-safety.

8. Resources for educational purposes

8.1 At present, each classroom contains one Active Touch or Philips Interactive touchscreen, one laptop for teacher use (linked to IWB/screen) and one laptop for class use.

There are 4 Laptop trolleys with 15 machines in each for use within school.

Acer Netbooks

iPads for use in class.

Macbooks for animation.

Nintendo DS are available for a year 4 project using BrainTrain.

Raspberry pi kits

programmable robots

3D Printer

Android devices to be used in classes for LBQ maths and independent research

Apple TV to allow wireless access from Ipad to the screens is now available in each class base.

All IT hardware is purchased to address the skills needed to be taught and all I.T is intended to be mobile. Computing is taught in classrooms not in a suite.

Each teacher has a laptop and Ipad for use within the classroom. Every computer in the

school is linked to the Internet. We keep resources for I.T/Computing, including software, in a central store as well as in classrooms.

8.2 Along with the computers, the school has the following:

Hardware

- colour printers;
- Apple TV's in every class base
- I pad 3's
- 5 Raspberry Pi kits
- 2 Programmable Robots
- digital cameras
- digi-blue video recorders
- listening centres
- calculators
- Interactive voting pads
- Bee-bots for control
- Animation cameras
- A mobile green screen solution
- A PA system in the hall including projector and microphones

Software

Our software provision is constantly changing to address the requirements of the new computing curriculum. Wherever possible online resources are sought for ease of access and provide access for children to use at home.

At home resources

All children are provided with a unique username and password which allows them access to the following managed resources;

RM Easimaths – Used in class and at home. Provides a daily 15-20 minutes of maths activities which are appropriate to their current level of ability. Staff are able to track progress and identify areas of development.

Handwriting scheme available at home

9. Monitoring and review

9.1 The monitoring of the standards of the children's work and of the quality of teaching in Computing is the responsibility of the subject leader and the Leadership Team. The I.T subject leader is also responsible for supporting colleagues in the teaching of Computing, for keeping informed about current developments in the subject and for providing a strategic lead and direction for the subject. The subject leader regularly discusses the Computing situation with the Headteacher and provides an annual strategic plan which is closely correlated to their performance management objectives. During the year, the I.T subject leader has specially-allocated time for carrying out the vital task of reviewing samples of the children's work and for visiting classes to observe the teaching of Computing.

10. Google Drive

Devonshire Primary Academy recently became cloud based - whereby all the staff have a Google email, therefore allowing them access to Google drive to upload planning, share resources, crowd source ideas and use the cloud system within Google. Pupil accounts are now being considered and with the support of the authority all safeguarding issues will be explored and addressed before implementation. Permission from parents will be obtained before allowing pupils access.

11. Tapestry

Foundation stage use the programme/app to record observations in note, pictorial and video form to evidence of achievement.

12. YouTube

YouTube is used as a learning resource by staff in their lessons, to educate, inspire and enthuse pupils. YouTube is open to pupils to use as directed by staff, i.e.: to research topics in History or to support pupils in their phonics (Jolly phonics clips). Vigilance and supervision by staff is paramount to ensure effective and safe use. Pupils are to be reminded of the dangers that the Internet and sites like YouTube sometimes hold and should be reminded before every lesson of their class ICT rules concerning appropriate searches and staying on the task they have been set. Any inappropriate searches or content should be reported immediately to the ICT co-ordinator to investigate and action.

Devonshire Primary Academy believes in the importance of teaching the safe ways to use resources like the internet and how to manage issues effectively and in a non-judgemental way, if they do so arise. (More details are available in the E-safety policy)

Reviewed: October 2019

Next review: October 2020



E-Safety Curriculum 2019

	Self-image and Identity	Online Relationships	Online Reputation	Online Bullying	Managing Online Information	Health, Well-being and Lifestyle	Privacy and Security	Copyright and Ownership
EYF S	I can recognise that I can say 'no' / 'please stop' / 'I'll tell' / 'I'll ask' to somebody who asks me to do something that makes me feel sad, embarrassed or upset.	I can recognise some ways in which the internet can be used to communicate.	I can identify ways that I can put information on the internet.	I can describe ways that some people can be unkind online.	I can talk about how I can use the internet to find things out.	I can identify rules that help keep us safe and healthy in and beyond the home when using technology.	I can identify some simple examples of my personal information (e.g. name, address, birthday, age, location).	I know that work I create belongs to me.
		I can give examples of how I (might) use technology to communicate with people I know.		I can offer examples of how this can make others feel.	I can identify devices I could use to access information on the internet.	I can give some simple examples.		
	I can explain how this could be either in real life or online.				I can give simple examples of how to find information (e.g. search engine, voice activated searching).			
							I can name my work so that others know it belongs to me.	

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	Self-image and Identity	Online Relationships	Online Reputation	Online Bullying	Managing Online Information	Health, Well-being and Lifestyle	Privacy and Security	Copyright and Ownership
Year 1	I can recognise that there may be people online who could make me feel sad, embarrassed or upset.	I can use the internet with adult support to communicate with people I know.	I can recognise that information can stay online and could be copied.	I can describe how to behave online in ways that do not upset others and can give examples.	I can use the internet to find things out.	I can explain rules to keep us safe when we are using technology both in and beyond the home.	I can recognise more detailed examples of information that is personal to me (e.g. where I live, my family's names,	I can explain why work I create using technology belongs to me.
	If something happens that makes me feel sad, worried, uncomfortable or frightened I can give examples of when and how to speak to an adult I can trust.	I can explain why it is important to be considerate and kind to people online.	I can describe what information I should not put online without asking a trusted adult first.		I can use simple keywords in search engines.	I can give examples of some of these rules.	where I go to school).	I can say why it belongs to me (e.g. 'it is my idea' or 'I designed it').
					I can describe and demonstrate how to get help from a trusted adult or helpline if I find content that makes me feel sad, uncomfortable worried or frightened.		I can explain why I should always ask a trusted adult before I share any information about myself online.	I can save my work so that others know it belongs to me (e.g. filename, name on content).
							I can explain how passwords can be used to protect information and devices.	

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	Self-image and Identity	Online Relationships	Online Reputation	Online Bullying	Managing Online Information	Health, Well-being and Lifestyle	Privacy and Security	Copyright and Ownership
Year 2	I can explain how other people's identity online can be different to their identity in real life.	I can use the internet to communicate with people I don't know well (e.g. email a pen pal in another school/country).	I can explain how information put online about me can last for a long time.	I can give examples of bullying behaviour and how it could look online.	I can use keywords in search engines.	I can explain simple guidance for using technology in different environments and settings.	I can describe how online information about me could be seen by others.	I can describe why other people's work belongs to them.
		I can give examples of how I might use technology to communicate with others I don't know well.	I know who to talk to if I think someone has made a mistake about putting something online.	I understand how bullying can make someone feel.	I can demonstrate how to navigate a simple webpage to get to information I need (e.g. home, forward, back buttons; links, tabs and sections).	I can say how those rules/guides can help me.		I can recognise that content on the internet may belong to other people.
	I can describe ways in which people might make themselves look different online.			I can talk about how someone can/would get help about being bullied online or offline.				I can describe and explain some rules for keeping my information private.
	I can give examples of issues online that might make me feel sad, worried, uncomfortable or frightened; I can give examples of how I might get help				I can explain what voice activated searching is and how it might be used (e.g. Alexa, Google Now, Siri).		I can explain what passwords are and can use passwords for my accounts and devices.	
				I can explain the difference between things that are imaginary, 'made up' or 'make believe' and things that are 'true' or 'real'.	I can explain how many devices in my home could be connected to the internet and can list some of those devices.			
				I can explain why some information I find online may				

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	Self-image and Identity	Online Relationships	Online Reputation	Online Bullying	Managing Online Information	Health, Well-being and Lifestyle	Privacy and Security	Copyright and Ownership
Year 3	I can explain what is meant by the term 'identity'.	I can describe ways people who have similar likes and interests can get together online.	I can search for information about myself online.	I can explain what bullying is and can describe how people may bully others.	I can use key phrases in search engines.	I can explain why spending too much time using technology can sometimes have a negative impact on me; I can give some examples of activities where it is easy to spend a lot of time engaged (e.g. games, films, videos).	I can give reasons why I should only share information with people I choose to and can trust. I can explain that if I am not sure or I feel pressured, I should ask a trusted adult.	I can explain why copying someone else's work from the internet without permission can cause problems.
	I can explain how I can represent myself in different ways online.	I can give examples of technology specific forms of communication (e.g. emojis, acronyms, text speak).	I can recognise I need to be careful before I share anything about myself or others online		I can explain what autocomplete is and how to choose the best suggestion.			I can give examples of what those problems might be.
	I can 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).	I can explain some risks of communicating online with others I don't know well.	I know who I should ask if I am not sure if I should put something online.	I can describe rules about how to behave online and how I follow them.	I can explain how the internet can be used to sell and buy things.		I understand and can give reasons why passwords are important.	
		I can explain why I should be careful who I trust online and what information I can trust them with.			I can explain the difference between a 'belief', an 'opinion' and a 'fact'		I can describe simple strategies for creating and keeping passwords private.	
		I can explain how my and other people's feelings can be hurt by what is said or written online.				I can describe how connected devices can collect and share my information with others.		
		I can explain why I can take back my trust in someone or something if I feel nervous, uncomfortable						

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		or worried.						
		I can explain what it means to 'know someone' online and why this might be different from knowing someone in real life.						
		I can explain what is meant by 'trusting someone online'. I can explain why this is different from 'liking someone online'						

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	Self-image and Identity	Online Relationships	Online Reputation	Online Bullying	Managing Online Information	Health, Well-being and Lifestyle	Privacy and Security	Copyright and Ownership
Year 4	I can explain how my online identity can be different to the identity I present in 'real life'.	I can describe strategies for safe and fun experiences in a range of online social environments.	I can describe how others can find out information about me by looking online.	I can identify some online technologies where bullying might take place.	I can describe how I can search for information within a wide group of technologies (e.g. social media, image sites, video sites).	I can explain how using technology can distract me from other things I might do or should be doing.	I can explain what a strong password is.	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.
	Knowing this, I can describe the right decisions about how I interact with others and how others perceive me.	I can give examples of how to be respectful to others online.	I can explain ways that some of the information about me online could have been created, copied or shared by others.	I can describe ways people can be bullied through a range of media (e.g. image, video, text, chat).	I can analyse information and differentiate between 'opinions', 'beliefs' and 'facts'. I understand what criteria have to be met before something is a 'fact'.	I can identify times or situations when I might need to limit the amount of time I use technology.	I can describe strategies for keeping my personal information private, depending on context.	I can give some simple examples.
				I can explain why I need to think carefully about how content I post might affect others, their feelings and how it may affect how others feel about them (their reputation).	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 suggest strategies to help me limit this time.		
					I can explain that some people I 'meet online' (e.g. through social media) may be computer programmes pretending to be real people.		I can explain that others online can pretend to be me or other people, including my friends.	

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							I can suggest reasons why they might do this.	
					I can explain why lots of people sharing the same opinions or beliefs online does not make those opinions or beliefs true.		I can explain how internet use can be monitored.	

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	Self-image and Identity	Online Relationships	Online Reputation	Online Bullying	Managing Online Information	Health, Well-being and Lifestyle	Privacy and Security	Copyright and Ownership				
Year 5	I can explain how identity online can be copied, modified or altered.	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 search for information about an individual online and create a summary report of the information I find.	I can recognise when someone is upset, hurt or angry online.	I can use different search technologies.	I can describe ways technology can affect healthy sleep and can describe some of the issues.	I can create and use strong and secure passwords.	I can assess and justify when it is acceptable to use the work of others.				
				I can describe how to get help for someone that is being bullied online and assess when I need to do or say something or tell someone.	I can evaluate digital content and can explain how I make choices from search results.							
				I can demonstrate responsible choices about my online identity, depending on context.	I can make positive contributions and be part of online communities.	I can describe ways that information about people online can be used by others to make judgments about an individual.	I can explain how to block abusive users.	I understand the difference between online mis-information (inaccurate information distributed by accident) and dis-information (inaccurate information deliberately distributed and intended to mislead).	I can explain key concepts including: data, information, fact, opinion, belief, true, false, valid, reliable and evidence	I can describe some strategies, tips or advice to promote healthy sleep with regards to technology.	I can explain how and why some apps may request or take payment for additional content (e.g. in-app purchases) and explain why I should seek permission from a trusted adult before purchasing.	
												I can describe some of the communities in

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		<p>which I am involved and describe how I collaborate with others positively.</p>		<p>online bullying on the apps and platforms that I use.</p>	<p>sceptical'. I can give examples of when and why it is important to be 'sceptical'.</p>			
					<p>I can explain what is meant by a 'hoax'. I can explain why I need to think carefully before I forward anything online.</p>			
				<p>I can describe the helpline services who can support me and what I would say and do if I needed their help (e.g. Childline).</p>	<p>I can explain why some information I find online may not be honest, accurate or legal.</p>			
					<p>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 either by accident or on purpose).</p>			

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Year 6	I can describe ways in which media can shape ideas about gender.	I can show I understand my responsibilities for the well-being of others in my online social group.	I can explain how I am developing an online reputation which will allow other people to form an opinion of me.	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 use search technologies effectively.	I can describe common systems that regulate age-related content (e.g. PEGI, BBFC, parental warnings)	I use different passwords for a range of online services.	I can demonstrate the use of search tools to find and access online content which can be reused by others.
					I can explain how search engines work and how results are selected and ranked.	and describe their purpose.	I can describe effective strategies for managing those passwords (e.g. password managers, acronyms, stories).	I can demonstrate how to make references to and acknowledge sources I have used from the internet.
	I can identify messages about gender roles and make judgements based on them.	I can explain how impulsive and rash communications online may cause problems (e.g. flaming, content produced in live streaming).			I can demonstrate the strategies I would apply to be discerning in evaluating digital content.	I can assess and action different strategies to limit the impact of technology on my health (e.g. nightshift mode, regular breaks, correct posture, sleep, diet and exercise).	I know what to do if my password is lost or stolen.	
					I can explain how and why some people may present 'opinions' as 'facts'.		I can explain what app permissions are and can give some examples from the technology or services I use.	
							I can describe simple ways to increase privacy on apps and services that provide privacy settings.	
		I can				I can describe	I can	I can

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	challenge and explain why it is important to reject inappropriate messages about gender online.				how some online information can be opinion and can offer examples.	explain the importance of self-regulating my use of technology; I can demonstrate the	describe ways in which some online content targets people to gain money or	
	I can describe issues online that might make me or others feel sad, worried, uncomfortable or frightened. I know and can give examples of how I might get help, both on and offline.	I can demonstrate how I would support others (including those who are having difficulties) online.	I can describe some simple ways that help build a positive online reputation.	I can identify a range of ways to report concerns both in school and at home about online bullying.	I can define the terms 'influence', 'manipulation' and 'persuasion' and explain how I might encounter these online (e.g. advertising and 'ad targeting').	strategies I use to do this (e.g. monitoring my time online, avoiding accidents).	information illegally; I can describe strategies to help me identify such content (e.g. scams, phishing).	
	I can explain why I should keep asking until I get the help I need.	I can demonstrate ways of reporting problems online for both myself and my friends			I can demonstrate strategies to enable me to analyse and evaluate the validity of 'facts' and I can explain why using these strategies are important.			
					I can identify, flag and report inappropriate content.			

Devonshire Computing Expectations

	Algorithms	Computational Thinking	Problem Solving	Networks: Knowledge and Understanding	Networks: Using and Applying	Digital Literacy: Knowledge and Understanding	Digital Literacy: Using and Applying	Data: Knowledge and Understanding	Data: Using and Applying
Year 1	Give simple instructions to everyday devices to make things happen.	Make choices to control simple models or simulations	Solve a problem using ICT.	Discuss and share how and when they use ICT in everyday life.	Complete simple tasks on a computer by following instructions.	Show an awareness of information in different formats.	Make decisions about whether or not statements or images found online are likely to be true.	Explain that images give information. Say what a pictogram is showing them.	Put data into a program (pictogram). Sort objects and pictures in lists or simple tables.
Year 2	Recognise what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following a sequence of instructions.	Write and test simple programs.	Use logical reasoning to predict the behaviour of simple programs.	Explain why digital folders are used.	Organise work into digital folders.	Recognise common uses of ICT beyond school.	Organise, store, manipulate and retrieve data in a range of digital formats.	Explain how a branching diagram or tree works.	Place objects and pictures in a list or simple table. Make a simple Y/N tree diagram to sort information.
Year 3	Use logical reasoning to explain how a simple algorithm works.	Use sequence, selection and repetition in programs.	Analyse and tackle problems by decomposing into smaller parts.	Demonstrate a knowledge of computer systems and hardware by describing input and output devices used in everyday life.	Use software or search engines effectively.	Become discerning in evaluating digital content.	Identify and select appropriate information using straightforward ways. Use efficient approaches to search and retrieve digital information, including the browser address bar and shortcuts.	Identify how to select information to put into a data table. Recognise which information is suitable for their topic.	Design a questionnaire to collect information.
Year 4	Detect and correct errors in algorithms and programs (debug).	Test programs using models and simulations. Design and write programs that accomplish specific goals, working with variables for input and output.	Use logical reasoning to detect problems, make changes and find out what happens as a result.	Demonstrate knowledge and understanding of computer hardware including input, output and storage devices.	Create programs to control physical systems. Discuss opportunities for online communication and collaboration.	Evaluate the quality and success of their solutions. Check the plausibility and usefulness of information they find.	Use and combine a variety of software and internet services on a range of digital devices to accomplish given goals, including collecting, analysing, evaluating and presenting data and information.	Describe how to sort and organise information to use in a database.	Create a branching database from information which they have collected and sorted.
Year 5	With support, begin to produce algorithms by using logical and appropriate structures to organise data, and create precise and accurate sequences of instructions.	Use flowcharts and other diagrams to follow how a process or model works.	Use logical reasoning to solve problems and model processes. Predict what will happen when variables and rules within a model are changed.	Demonstrate knowledge and understanding of computer systems and hardware by identifying and defining the functions of the processor, memory, backing storage and peripherals in a typical desktop computer.	Select, use and combine a variety of software, including internet services on a range of digital devices, explaining how email and online discussion areas are used for communication and collaboration.	Recognise the need for accuracy when searching for information. Use different sources to double check information found.	Prepare and present information in a range of forms, using ICT safely and responsibly.	Describe how to check for and spot inaccurate data. Know which formulas to use to change a spreadsheet model.	Create data collection forms and enter data from these accurately. Make graphs from the calculations on their own spreadsheet.
Year 6	Produce algorithms independently using logical and appropriate structures to organise and record data.	Create flowcharts and other diagrams to explain how a process or model works.	Independently problem solve and model situations and processes, by understanding and explaining the impact of changing variables and rules within a model.	Demonstrate knowledge and understanding of how networks work by describing the types of service offered (e.g. through email, www, ftp and video conferencing).	Design and create/use a range of programs to accomplish given goals.	Take account of accuracy and potential bias when searching for and selecting information.	Evaluate and improve presentations in the light of discussion, marking and audience response.	Explain that changing the numerical data affects a calculation.	Create data collection forms and enter data from these accurately. Make graphs from the calculations on their spreadsheet. Sort and filter information.