# Subject Specific-Skills: Age-related expectations in Computing

| Year | Computing | E-Safety |
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| **1.1**<br><br>We are treasure hunters Using programmable toys | I can:<br><br>• Understand that a programmable toy can be controlled by inputting a sequence of instructions.<br>• Develop and record sequences of instructions as an algorithm.<br>• Program the toy to follow their algorithm.<br>• Debug their programs.<br>• Predict how their programs will work. | I can:<br><br>• Understand that rules help us stay safe, both in the real world and online.<br>• Suggest strategies for staying safe in different online scenarios.<br>• Help to develop a set of online safety rules that are easily understood and appropriate for Year 1. |
| **1.2**<br><br>We are TV chefs Filming the steps of a recipe | I can:<br><br>• Break down a process into simple, clear steps, as in an algorithm.<br>• Use different features of a video camera.<br>• Use a video camera to capture moving images. • Develop collaboration skills.<br>• Discuss their work and think about how it could be improved | I can:<br><br>• Understand that unkind behaviour online can affect other people, even though we can't see them.<br>• Understand that the rules created in Unit 1.1 can be applied to any concerns they may have about their online activities. |
| **1.3**<br><br>We are painters Illustrating an eBook | I can:<br><br>• Use the web safely to find ideas for an illustration.<br>• Select and use appropriate painting tools to create and change images on the computer.<br>• Understand how this use of ICT differs from using paint and paper.<br>• Create an illustration for a particular purpose.<br>• Know how to save, retrieve and change their work.<br>• Reflect on their work and act on feedback received | I can:<br><br>• Learn the very basic principles of what the internet is.<br>• Understand how people use the internet.<br>• Understand that using computer devices too often can be bad for us and we should take time out form technology to do other things.<br>• Discuss what to do if they see or hear something online that upsets them. |
| **1.4**<br><br>We are collectors Finding images using the web | I can:<br><br>• Find and use pictures on the web.<br>• Know what to do if they encounter pictures that cause concern.<br>• Group images on the basis of a binary (yes/no) question.<br>• Organise images into more than two groups according to clear rules.<br>• Sort (order) images according to some criteria.<br>• Ask and answer binary (yes/no) questions about their | I can:<br><br>• Understand what is meant by 'personal information'.<br>• Recognise that anyone online who we don't know in real life is a stranger.<br>• Understand how we can protect our personal information, including reporting worries to trusted adults. |

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| | images. | |
| **1.5**<br><br>We<br>are storytellers<br>Producing a<br>talking book | I can:<br>• Use sound recording equipment to record sounds.<br>• Develop skills in saving and storing sounds on the computer.<br>• Develop collaboration skills as they work together in a group.<br>• Understand how a talking book differs from a paper-based book.<br>• Talk about and reflect on their use of ICT.<br>• Share recordings with an audience. | I can:<br>• Understand what is meant by 'digital citizen'.<br>• Understand how to be responsible, respectful and safe online.<br>• Understand that being a good digital citizen means having a kind heart, a warning tummy and a thinking brain; all things that keep us safe online.<br>• Recall what to do if something happens online that makes them feel uncomfortable. |
| **1.6**<br><br>We are<br>celebrating<br>Creating a card<br>digitally | I can:<br>• Develop basic keyboard skills, through typing and formatting text.<br>• Develop basic mouse skills.<br>• Use the web to find and select images.<br>• Develop skills in storing and retrieving files.<br>• Develop skills in combining text and images.<br>• Discuss their work and think about whether it could be improved. | I can:<br>• Understand the importance of playing games in shared spaces where grown-ups are available for support.<br>• Understand the importance of taking breaks away from technology. |
| **2.1**<br><br>2.1 We are<br>astronauts<br>Programming<br>on screen | I can:<br>• Have a clear understanding of algorithms as sequences of instructions.<br>• Convert simple algorithms to programs. • Predict what a simple program will do.<br>• Spot and fix (debug) errors in their programs. | I can:<br>• Consider online safety scenarios encountered in Year 1 (both at school and at home) and appreciate how these new experiences can be used to update their online safety rules.<br>• Consider what strategies they might use if their usual trusted adult is not available.<br>• Review and edit their online safety guidelines.<br>• Develop their online safety rules so they are easily. understood and appropriate for Year 2 pupils. |
| **2.2**<br><br>We are games<br>testers Exploring<br>how computer<br>games work | I can:<br>• Describe carefully what happens in computer games.<br>• Use logical reasoning to make predictions of what a program will do.<br>• Test these predictions.<br>• Think critically about computer games and their use. | I can:<br>• Begin to understand the concept of online bullying and the role of the bystander.<br>• Develop an understanding of the consequences of online bullying.<br>• Recall their online safety rules for reporting |

| | I can: <br>• Be aware of how to use games safely and in balance with other activities. | concerns and inappropriate behaviour. |
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| **2.3** <br> 2.3 We are photographers <br> Taking better photos | I can: <br>• Consider the technical and artistic merits of photographs. <br>• Use a digital camera or camera app. <br>• Take digital photographs. <br>• Review and reject or rate the images they take. <br>• Edit and enhance their photographs. <br>• Select their best images to include in a shared portfolio. | I can: <br>• Understand the very basic principles of how search engines work. <br>• Understand the key steps for searching the web safely. <br>• Understand how to report concerns when searching the web. |
| **2.4** <br> We are researchers <br> Researching a topic | I can: <br>• Develop collaboration skills through working as part of a group. <br>• Develop research skills through searching for information on the internet. <br>• Improve note-taking skills through the use of mind mapping. <br>• Develop presentation skills through creating and delivering a short multimedia presentation. | I can: <br>• Understand that passwords are an important part of keeping information safe. <br>• Understand the differences between strong and weak passwords. <br>• Understand that sharing a password makes it weak |
| **2.5** <br> 2.5 We are detectives <br> Collecting clues | I can: <br>• Understand that email can be used to communicate. <br>• Develop skills in opening, composing and sending emails. <br>• Gain skills in opening and listening to audio files on the computer. <br>• Use appropriate language in emails. <br>• Develop skills in editing and formatting text in emails. <br>• Be aware of online safety issues when using email. | I can: <br>• Understand that the way technology is used is as important as good online behaviour. <br>• Understand that the way we use technology impacts the people around us. <br>• Further develop responses to incidents of poor behaviour online. |
| **2.6** <br> We are zoologists <br> Collecting data about bugs | I can: <br>• Collect and classify a group of items by answering questions. <br>• Collect data using tick charts or tally charts. <br>• Use simple charting software to produce pictograms and other basic charts. <br>• Take, edit and enhance photographs. Record information on a digital map. | I can: <br>• Recognise the PEGI age rating system for digital games. <br>• Understand that the system is useful for helping people decide which games are appropriate. <br>• Understand what to do if someone nearby is playing a game which is inappropriate for them. |

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| **3.1**<br>.1 We are programmers Programming an animation | <ul><li>Create an algorithm for an animated scene in the form of a storyboard.</li><li>Write a program in Scratch to create the animation.</li><li>Correct mistakes in their animation programs.</li></ul> | <ul><li>Consider online safety scenarios encountered in Year 2 (both at school and at home) and appreciate how these new experiences can be used to refine their online safety rules</li><li>Consider what new strategies they can apply to online safety scenarios, such as calling Childline</li><li>Review and edit their online safety guidelines</li><li>Develop and edit their online safety rules so they are easily understood and appropriate for Year 3 pupils.</li></ul> |
| **3.2**<br>3.2 We are bug fixers Finding and correcting bugs in programs | <ul><li>Develop a number of strategies for finding errors in programs.</li><li>Build up resilience and strategies for problem solving.</li><li>Increase their knowledge and understanding of Scratch.</li><li>Recognise a number of common types of bug in software.</li></ul> | <ul><li>Begin to understand that information shared online cannot always be controlled</li><li>Develop a deeper understanding of the consequences of online bullying</li><li>Understand the role of a bystander in online bullying</li></ul> |
| **3.3**<br>3.3 We are presenters Videoing performance | <ul><li>Gain skills in shooting live video, such as framing shots, holding the camera steady, and reviewing.</li><li>Edit video, including adding narration and editing clips by setting in/out points.</li><li>Understand the qualities of effective video, such as the importance of narrative, consistency, perspective and scene length.</li></ul> | <ul><li>Use clues to make choices about which web pages they consider most useful and trustworthy</li><li>Understand that not all links are safe or trustworthy</li><li>Understand different ways to report concerns and inappropriate behaviour.</li></ul> |
| **3.4**<br>We are vloggers Making and sharing a short screencast presentation | <ul><li>Use a search engine to learn about a new topic.</li><li>Plan, design and deliver an interesting and engaging presentation.</li><li>Search for and evaluate online images.</li><li>Create their own original images.</li><li>Create a video slide cast of a narrated presentation.</li><li>Develop understanding of how the internet, the web and search engines work.</li></ul> | <ul><li>Understand that every time we use the internet, we leave a digital trail that can be found, copied, shared and broadcast</li><li>Understand that the things we upload onto the internet last forever.</li></ul> |
| **3.5**<br>3.5 We are communicators Communicating safely on the | <ul><li>Develop a basic understanding of how email works.</li><li>Gain skills in using email.</li><li>Be aware of broader issues surrounding email, including 'netiquette' and online safety.</li></ul> | <ul><li>Understand that good online behaviour is important for making the internet an enjoyable place for everyone</li><li>Understand that email is a widely used form of</li></ul> |

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| internet | • Work collaboratively with a remote partner.<br>• Experience video conferencing. | digital communication that lasts forever and can be shared. |
| **3.6**<br>We are opinion pollsters<br>Collecting and analysing data | I can:<br>• Understand some elements of survey design.<br>• Understand some ethical and legal aspects of online data collection.<br>• Use the web to facilitate data collection.<br>• Gain skills in using charts to analyse data.<br>• Gain skills in interpreting result | I can:<br>• Understand that internet identities are actively constructed by the user<br>• Recognise that internet identities can be misleading or not representative of the creator<br>• Recall that personal information should not be shared by anyone online who we don't know in real life. |
| **4.1**<br>We are software developers<br>Developing a simple educational game | I can:<br>• Develop an educational computer game using selection and repetition.<br>• Understand and use variables.<br>• Start to debug computer programs.<br>• Recognise the importance of user interface design, including consideration of input and output. | I can:<br>• Consider online safety scenarios encountered in Year 3 (both at school and at home) and appreciate how these new experiences can be used to update their online safety rules.<br>• Consider what new strategies they can apply to online safety scenarios, beyond talking to a trusted adult.<br>• Review and edit their online safety guidelines.<br>• Develop their online safety rules so they are easily understood and appropriate for Year 4 pupils. |
| **4.2**<br>We are toy designers<br>Prototyping an interactive toy | I can:<br>• Design and make an on-screen prototype of a computer-controlled toy.<br>• Understand different forms of input and output (such as sensors, switches, motors, lights and speakers).<br>• Design, write and debug the control and monitoring program for their toy | I can:<br>• Understand that peer pressure can be a positive and negative influence.<br>• Understand that access to the internet is not the same for everyone.<br>• Recall ways to report concerns and inappropriate behaviour. |
| **4.3**<br>We are musicians<br>Producing digital music | I can:<br>• Use one or more programs to edit music.<br>• Create and develop a musical composition, refining their ideas through reflection and discussion. • Develop collaboration skills.<br>• Develop an awareness of how their composition can enhance work in other media. | I can:<br>• Understand that because of the internet, information can be spread more quickly and reach more people now than at any time in the past.<br>• Understand that although information posted on the internet might not always be true or |

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| **4.4**<br>We are HTML editors Editing and writing HTML | I can:<br>• Understand some technical aspects of how the internet makes the web possible.<br>• Use HTML tags for elementary mark up.<br>• Use hyperlinks to connect ideas and sources.<br>• Code up a simple web page with useful content.<br>• Understand some of the risks in using the web | | I can:<br>• Understand the risks involved in clicking on and opening links on suspicious websites and in emails.<br>• Understand that hacking can be illegal and has consequences for the hacker<br>• Develop awareness of viruses and what to do if they think their account has been compromised. |
| **4.5**<br>We are co-authors Producing a wiki | I can:<br>• Understand the conventions for collaborative online work, particularly in wikis.<br>• Be aware of their responsibilities when editing another people's work.<br>• Become familiar with Wikipedia, including potential problems associated with its use.<br>• Practise research skills.<br>• Write for a target audience using a wiki tool.<br>• Develop collaboration skills.<br>• Develop proofreading skills. | | • Understand that both digital rights and responsibilities are important to ensure the internet is a great place for everyone.<br>• Understand that there are consequences for knowingly ignoring rights.<br>• Further develop a positive and responsible attitude towards technology and internet use. |
| **4.6**<br>We are meteorologists Presenting the weather | I can:<br>• Understand different measurement techniques for weather, both analogue and digital.<br>• Use computer-based data logging to automate the recording of some weather data.<br>• Use spreadsheets to create charts Analyse data, explore inconsistencies in data and make predictions • Practise using presentation software and, optionally, video | | I can:<br>• Understand that virtual friends are still strangers that they do not know.<br>• Apply their knowledge of online safety to decide what information they, as virtual friends, can safely share online.<br>• Recap rules for reporting suspicious or uncomfortable online situations. |
| **5.1**<br>We are game developers Developing an interactive game | I can:<br>• Create original artwork and sound for a game.<br>• Design and create a computer program for a computer game, which uses sequence, selection, repetition and variables.<br>• Detect and correct errors in their computer game. | | I can:<br>• Consider online safety scenarios encountered in Year 4 (both at school and at home) and appreciate how these new experiences can be used to update their online safety rules.<br>• Consider what new strategies they can apply to |

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| | | • Use iterative development techniques (making and testing a series of small changes) to improve their game. | online safety scenarios, such as clicking the CEOP 'Report abuse' button<br>• Review and edit their online safety guidelines.<br>• Develop their online safety rules so they are easily understood and appropriate for Year 5 pupils. |
| **5.2**<br>We are cryptographers<br>Cracking codes | | I can:<br>• Be familiar with semaphore and Morse code.<br>• Understand the need for private information to be encrypted.<br>• Encrypt and decrypt messages in simple ciphers.<br>• Appreciate the need to use complex passwords and to keep them secure.<br>• Have some understanding of how encryption works on the we | I can:<br>• Recognise that online behaviour can have real life negative effects on other people.<br>• Understand that we must take responsibility for our own actions online, regardless of what other people are doing.<br>• Critically assess all information surrounding an online safety scenario to decide whether it constitutes online bullying.<br>• Use their knowledge of online safety to reach a consensus on the appropriate response to an online incident. |
| **5.3**<br>We are artists<br>Fusing geometry and art | | I can:<br>• Develop an appreciation of the links between geometry and art.<br>• Become familiar with the tools and techniques of a vector graphics package.<br>• Develop an understanding of turtle graphics.<br>• Experiment with the tools available, refining and developing their work as they apply their own criteria to evaluate it and receive feedback from their peers.<br>• Develop some awareness of computer-generated art, fractal-based landscapes. | I can:<br>• Understand that some people get paid to endorse products online.<br>• Develop a discerning attitude to online content so that they can confidently reach their own conclusions.<br>• Appreciate the value of trusted adults in helping them reach an informed conclusion. |
| **5.4**<br>5.4 We are web developers<br>Creating a website about cyber safety | | I can:<br>• Develop their research skills to decide what information is appropriate.<br>• Understand some elements of how search engines select and rank results.<br>• Question the plausibility and quality of information. • Develop and refine their ideas and text collaboratively.<br>• Develop their understanding of online safety and responsible use of technology | I can:<br>• Understand that posting inappropriate information online can cause regret later.<br>Understand how to manage their online reputation.<br>• Understand that, although information posted on the internet might not always be true or accurate, it can last forever.<br>• Understand that it is possible to search the internet for information about individuals. |

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| **5.5**<br>We are bloggers<br>Sharing experiences and opinions | I can:<br>• Become familiar with blogs as a medium and a genre of writing.<br>• Create a sequence of blog posts on a theme.<br>• Incorporate additional media.<br>• Comment on the posts of others.<br>• Develop a critical, reflective view of a range of media, including text. | I can:<br>• Understand that copyright laws exist to protect original content creators.<br>• Understand that content they choose to use or upload on the internet may be subject to copyright laws.<br>• Further develop their understanding of rights and responsibilities as digital citizens. |
| **5.6**<br>We are architects<br>Creating a virtual space | I can:<br>• Understand the work of architects, designers and engineers working in 3D.<br>• Develop familiarity with a simple CAD (computer aided design) tool.<br>• Develop spatial awareness by exploring and experimenting with a 3D virtual environment.<br>• Develop greater aesthetic awareness. | I can:<br>• Understand different business models for online games.<br>• Understand that accounts for devices are linked to real-life bank accounts.<br>• Understand that some features in online games and apps cost real money.<br>• Understand that research, parental controls and device settings are tools we can use to help us game confidently |
| **6.1**<br>We are app planners<br>Planning the creation of a mobile app | I can:<br>• Develop an awareness of the capabilities of smartphones and tablets.<br>• Understand geolocation, including GPS.<br>• Identify interesting, solvable problems.<br>• Evaluate competing products. • Pitch a proposal for a smartphone or tablet app | I can:<br>• Consider online safety scenarios encountered in Year 5 (both at school and at home) and appreciate how these new experiences can be used to update their online safety rules.<br>• Consider what new strategies they can apply to online safety scenarios, such as using reporting buttons within websites and apps.<br>• Review and edit their online safety guidelines.<br>• Develop their online safety rules so they are easily understood and appropriate for Year 6 pupils. |
| **6.2**<br>We are project managers<br>Developing project management skills | I can:<br>• Scope a project to identify different components that must be successfully combined.<br>• Identify their existing talents and plan how they can develop further knowledge and skills.<br>• Identify the component tasks of a project and develop a timeline to track progress.<br>• Identify the resources they'll need to accomplish a project.<br>• Use web-based research skills to source tools, content | I can:<br>• Understand the negative consequences of sharing nude selfies.<br>• Develop confidence in saying no when they are posed with a request for inappropriate and/or indecent images of themselves.<br>• Understand that once an image is online, it stays online forever.<br>• Understand what is meant by nude selfies and learn that, sending, sharing and storing |

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| | | and other resources.<br>• Consider strategies to ensure the quality of a collaborative project. | inappropriate images of Under18s is a crime. |
| **6.3**<br>We are market researchers<br>Researching the app market | I can:<br>• Create a set of good survey questions.<br>• Analyse the data obtained from a survey.<br>• Work collaboratively to plan questions.<br>• Conduct an interview or focus group.<br>• Analyse and interpret the information obtained from interviews or a focus group.<br>• Present their research findings. | | I can:<br>• Understand that most online sites and apps require an account holder to be a minimum of 13 years old.<br>• Understand that they should check and adhere to the age restrictions of a site or app.<br>• Understand why age restrictions apply to online communication tools.<br>• Develop resilience to online behaviour and influences in an unfamiliar setting.<br>• Learn how to use appropriate social networking sites safely. |
| **6.4**<br>6.4 We are interface designers<br>Designing an interface for an app | I can:<br>• Work collaboratively to design the app's interface.<br>• Use wireframing tools to create a design prototype of their app.<br>• Develop or source the individual interface components (media assets) they will use.<br>• Address accessibility and inclusion issues.<br>• Document their design decisions and the process they've followed. | | I can:<br>• Understand that they need to respect other people's preferences when uploading images or video to the internet.<br>• Understand that everyone has the right to privacy and can refuse permission for images or videos of themselves being uploaded to the internet.<br>• Develop their understanding that content posted on the internet can last forever. |
| **6.5**<br>We are app developers<br>Developing a simple mobile phone app | I can:<br>• Become familiar with another programming toolkit or development platform.<br>• Import existing media assets to their project.<br>• Write down the algorithms for their app.<br>• Program, debug and refine the code for their app.<br>• Thoroughly test and evaluate their app. | | I can:<br>• Develop confidence in their ability to act appropriately when confronted with unfamiliar situations involving technology and the internet.<br>• Revisit the key concepts of digital citizenship. |

| **6.6**<br>We are marketeers<br>Creating video and web copy for a mobile phone app | I can:<br><br>• Consider key marketing messages, including identifying a unique selling point.<br>• Develop a printed flyer or brochure incorporating text and images.<br>• Further develop knowledge, skills and understanding in relation to creating a website.<br>• Further develop skills relating to shooting and editing video. | I can:<br><br>• Understand the risks involved with online gaming, including exposure to inappropriate content, grooming, bullying, trolling and the use of bribery tactics.<br>• Understand that research and parental controls and device settings are tools we can use to help us game safely and confidently.<br>• Apply their knowledge of safe gaming practices to plan and deliver an assembly to other children and/or parents.<br>• Consolidate everything they have learnt about age-appropriate online gaming in preparation for their transition to KS3. |
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