Skills Progression: Computing

EYFS

This document outlines the most relevant statements taken from the Early Learning Goals in the EYFS statutory framework and how they link with our teaching of Computing in EYFS. The most relevant statements for Computing are taken from the following areas of learning:

- Personal, Social and Emotional Development
- Physical Development
- Understanding of the World
- Expressive Arts and Design

ELG: Expressive Arts and design: Creating with materials

- *Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.*

ELG: Personal, Social and Emotional Development: Managing Self

- *Be confident to try new activities and show independence, resilience and perseverance in the face of challenge.*
- *Explain the reasons for rules, know right from wrong and try to behave accordingly.*

Safety and Privacy – Technology Around Us

- Explain how my work on the computer belongs to me and that other people's work belongs to them.
- Explain what something means to be private.
- Talk about how my body feels when I am not comfortable with something.
- Know who can help me if I am feeling worried.
- Understand how to be kind to others online.
- Choose activities in my free time that help me to be healthy (including understanding 'sensible screentime').
- Talk about what technology is used at home, outdoors and in the world around me.

Mouse, Trackpad and Keyboard Skills (linked to Physical Development: Develop small motor skills to use a range of tools confidently)

- Hold a computer mouse with my finger on the correct buttons and make the cursor move around the computer screen.
- Use a mouse to accurately click and drag objects on a screen and mouse roller to scroll up and down a page.
- Use a laptop touchpad.
- Find all the letters on a keyboard and put spaces between my words in typed work.
- Type capital letters and lower case letters and know how to change between them.
- Type numbers using a keyboard.

	- Use the arrow keys to move around the screen. **Drawing, Photo and Sound Skills** - Select colours when painting on the computer and draw with different widths of pens. - Try different drawing tools on the computer including the undo button and erase button. - Take photos using a digital device. - Talk about what photos show. - Make music using the computer. - Add sound effects to my work. - Record myself speaking and play back the sounds. **Robots** - Talk about where I am moving a toy vehicle and describe the route taken by a toy vehicle. - Follow directions to make a route for a toy vehicle. - Plan a route and make a floor robot move. - Control forwards, backwards and rotation of a floor robot one step at a time.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Knowledge: *(National Curriculum Coverage)* **Computer Science**	KS1 • *Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions* • *Create and debug simple programs.* • *Use logical reasoning to predict the behaviour of simple programs.*		KS2 • *Design, write an debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.* • *Use sequence, selection and repetition in programs; work with variables and various forms of input and output.* • *Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.*			
Computer Science	- Children understand that an algorithm is a set of instructions used to solve a problem or achieve an objective. They know that a computer program turns an algorithm into code that the computer can understand. - Children can work out what is wrong with a simple algorithm when the steps are out of order, e.g. The Wrong Sandwich in Purple Mash and can write	- Children can explain that an algorithm is a set of instructions to complete a task. When designing simple programs, children show an awareness of the need to be precise with their algorithms so that they can be successfully converted into code. - Children can create a simple program that achieves a specific purpose. They can also identify and correct some errors, e.g. Debug	- Children can turn a simple real-life situation into an algorithm for a program by deconstructing it into manageable parts. Their design shows that they are thinking of the desired task and how this translates into code. Children can identify an error within their program that prevents it following the desired algorithm and then fix it. - Children demonstrate the ability to design	- When turning a real-life situation into an algorithm, the children's design shows that they are thinking of the required task and how to accomplish this in code using coding structures for selection and repetition. Children make more intuitive attempts to debug their own programs. - Children's use of timers to achieve repetition effects are becoming more logical and are integrated into	- Children may attempt to turn more complex real life situations into algorithms for a program by deconstructing it into manageable parts. Children are able to test and debug their programs as they go and can use logical methods to identify the approximate cause of any bug but may need some support identifying the specific line of code. - Children can translate	- Children are able to turn a more complex programming task into an algorithm by identifying the important aspects of the task (abstraction) and then decomposing them in a logical way using their knowledge of possible coding structures and applying skills from previous programs. Children test and debug their program as they go and use logical methods to identify the cause

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	their own simple algorithm, e.g. Colouring in a Bird activity. Children know that an unexpected outcome is due to the code they have created and can make logical attempts to fix the code, e.g. Bubbles activity in 2Code. - at is wrong with a simple algorithm when the steps are out of order, e.g. The Wrong Sandwich in Purple Mash and can write their own simple algorithm, e.g. Colouring in a Bird activity. Children know that an unexpected outcome is due to the code they have created and can make logical attempts to fix the code, e.g. Bubbles activity in 2Code.	Challenges: Chimp. Children's program designs display a growing awareness of the need for logical, programmable steps. - Children can identify the parts of a program that respond to specific events and initiate specific actions. For example, they can write a cause of what will happen in a program. - Children can identify the parts of a program that respond to specific events and initiate specific actions. For example, they can write a cause and effect sentence of what will happen in a program.	and code a program that follows a simple sequence. They experiment with timers to achieve repetition effects in their programs. Children are beginning to understand the difference in the effect of using a timer command rather than a repeat command when creating repetition effects. - Children's designs for their programs show that they are thinking of the structure of a program in logical, achievable steps and absorbing some new knowledge of coding structures. For example, repetition and use of timers. They make good attempts to 'step	their program designs. They understand 'IF statements' for selection and attempt to combine these with other coding structures including variables to achieve the effects that they design in their programs. As well as understanding how variables can be used to store information while a program is executing, they are able to use and manipulate the value of variables. Children can make use of user inputs and outputs such as 'print to screen'. e.g. 2Code - Children's designs for their programs show that they are thinking of the	algorithms that include sequence, selection and repetition into code with increasing ease and their own designs show that they are thinking of how to accomplish the set task in code utilising such structures. They are combining sequence, selection and repetition with other coding structures to achieve their algorithm design. - When children code, they are beginning to think about their code structure in terms of the ability to debug and interpret the code later, e.g. the use of tabs to organise code and the	of bugs, demonstrating a systematic approach to try to identify a particular line of code causing a problem. - Children translate algorithms that include sequence, selection and repetition into code and their own designs show that they are thinking of how to accomplish the set task in code utilising such structures, including nesting structures within each other. Coding displays an improving understanding of variables in coding, outputs such as sound and movement, inputs from the user of the program such as

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	- When looking at a program, children can read code one line at a time and make good attempts to envision the bigger picture of the overall effect of the program. Children can, for example, interpret where the turtle in 2Go challenges will end up at the end of the program.		through' more complex code in order to identify errors in algorithms and can correct this. e.g. In programs such as Logo, they can 'read' programs with several steps and predict the outcome accurately.	structure of a program in logical, achievable steps and absorbing some new knowledge of coding structures. For example, 'IF' statements, repetition and variables. They can trace code and use step-through methods to identify errors in code and make logical attempts to correct this. In programs such as Logo, they can 'read' programs with several steps and predict the outcome accurately. - Children recognise the main component parts of hardware which allow computers to join and form a network. Their ability to understand the	naming of variables. - Children understand the value of computer networks but are also aware of the main dangers. They recognise what personal information is and can explain how this can be kept safe. Children can select the most appropriate form of online communications contingent on audience and digital content, e.g. 2Blog, 2Email, Display Boards.	button clicks and the value of functions. - Children are able to interpret a program in parts and can make logical attempts to put the separate parts of a complex algorithm together to explain the program as a whole. - Children understand and can explain in some depth the difference between the internet and the World Wide Web. Children know what a WAN and LAN are and can describe how they access the internet in school.

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				online safety implications associated with the ways the internet can be used to provide different methods of communication is improving.		
Knowledge: *(National Curriculum Coverage)*	<u>KS1</u> • *Use technology purposefully to create, organise, store, manipulate and retrieve digital content.*		<u>KS2:</u> • *Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.* • *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.* • *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.*			
Information Technology	- Children are able to sort, collate, edit and store simple digital content e.g. children can name, save and retrieve their work and follow simple instructions to access online resources, use Purple Mash 2Quiz example	- Children demonstrate ability to organise data using, for example, a database such as 2investigate and can retrieve specific data for conduction simple searches. Children are able to edit more complex digital data such	- Children can carry out simple searches to retrieve digital content. They understand that to do this, they are connecting to the internet and using a search engine such as Purple Mash search or internet-wide search engines.	- Children understand the function, features and layout of a search engine. They can appraise selected webpages for credibility and information at a basic level. - Children are able to make improvements to	- Children search with greater complexity for digital content when using a search engine. They are able to explain in some detail how credible a webpage is and the information it contains. - Children are able	- Children readily apply filters when searching for digital content. They are able to explain in detail how credible a webpage is and the information it contains. They compare a range of digital content sources and are able to rate them

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	(sorting shapes), 2Code design mode (manipulating backgrounds) or using pictogram software such as 2Count.	as music compositions within 2Sequence. Children are confident when creating, naming, saving and retrieving content. Children can use a range of media in their digital content including photos, text and sound.	- Children can collect, analyse, evaluate and present data and information using a selection of software, e.g. using a branching database (2Question), using software such as 2Graph. - Children can consider what software is most appropriate for a given task. They can create purposeful content to attach to email, e.g. 2Respond.	digital solutions based on feedback. Children make informed software choices when presenting information and data. They create linked content using a range of software such as 2Connect and 2Publish+. Children share digital content within their community, i.e. using Virtual Display Boards.	to make appropriate improvements to digital solutions based on feedback received and can confidently comment on the success of the solution. e.g. creating their own program to meet a design brief using 2Code. They objectively review solutions from others. Children are able to collaboratively create content and solutions using digital features within software such as collaborative mode. They are able to use several ways of sharing digital content, i.e. 2Blog, Display Boards and 2Email.	in terms of content quality and accuracy. Children use critical thinking skills in everyday use of online communication. - Children make clear connections to the audience when designing and creating digital content. The children design and create their own blogs to become a content creator on the Internet, e.g. 2Blog. They are able to use criteria to evaluate the quality of digital solutions and are able to identify improvements, making some refinements.

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Knowledge: *(National Curriculum Coverage)*	KS1 • *Recognise common uses of information technology beyond school.* • *Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.*		KS2: • Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.			
Digital Literacy	- Children understand what is meant by technology and can identify a variety of examples both in and out of school. They can make a distinction between objects that use modern technology and those that do not e.g. a microwave vs. a chair. - Children understand the importance of keeping information, such as their usernames and passwords, private	- Children can effectively retrieve relevant, purposeful digital content using a search engine. They can apply their learning of effective searching beyond the classroom. They can share this knowledge, e.g. 2Publish example template. Children make links between technology they see around them, coding and multimedia work they do in school e.g. animations, interactive code	- Children demonstrate the importance of having a secure password and not sharing this with anyone else. Furthermore, children can explain the negative implications of failure to keep passwords safe and secure. They understand the importance of staying safe and the importance of their conduct when using familiar communication tools such as	- Children can explore key concepts relating to online safety using concept mapping such as 2Connect. They can help others to understand the importance of online safety. Children know a range of ways of reporting inappropriate content and contact.	- Children have a secure knowledge of common online safety rules and can apply this by demonstrating the safe and respectful use of a few different technologies and online services. Children implicitly relate appropriate online behaviour to their right to personal privacy and mental wellbeing of themselves and others.	- Children demonstrate the safe and respectful use of a range of different technologies and online services. They identify more discreet inappropriate behaviours through developing critical thinking, e.g. 2Respond activities. They recognise the value in preserving their privacy when online for their own and other people's safety.

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	and actively demonstrate this in lessons. Children take ownership of their work and save this in their own private space such as their My Work folder on Purple Mash.	and programs. - Children know the implications of inappropriate online searches. Children begin to understand how thing are shared electronically such as posting work to the Purple Mash display board. They develop an understanding of using email safely by using 2Respond activities on Purple Mash and know ways of reporting inappropriate behaviours and content to a trusted adult.	2Email in Purple Mash. They know more than one way to report unacceptable content and contact.			
Knowledge: *(National Curriculum Coverage)*	<u>KS1</u> • *Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.*		<u>KS2</u> • *Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact*			

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Common Sense Education ✓ Media Balance and Well-being ✓ Cyberbullying, Digital Drama and Hate Speech ✓ Relationships and Communication ✓ News and Media Literacy ✓ Privacy and Security ✓ Digital Footprint and Identity	Children will: - Know when and why to take breaks from device time. - Consider the feelings of people around them, even when engaged in fun online activities. - Learn why it's important to be aware and respectful of people while using devices. - Learn the "Pause! Breathe! Finish Up!" routine as a self-regulation strategy for transitioning from technology to face-to-face interactions. - Discover that the internet can be used to visit faraway places and learn new things. - Compare how staying safe online	Children will: - Understand the importance of being safe, responsible, and respectful online. - Learn the "Pause & Think Online" song to remember basic digital citizenship concepts. - Recognise the different kinds of feelings they can have when using technology. - Know what to do when they don't have a good feeling when using technology. - Understand that being safe online is similar to staying safe in real life. - Learn to identify websites and apps that are "just right" and "not right" for them. - Know how to get help from an adult	Children will: - Understand that being a good digital citizen means being safe and responsible online. - Take a pledge to be a good digital citizen. - Recognise the ways in which digital devices can be distracting. - Identify how they feel when others are distracted by their devices. - Identify ideal device-free moments for themselves and others. - Recognise the kind of information that is private. - Understand that they should never give out private information online. - Learn that the information they share online	Children will: - Understand the importance of a strong password. - Consider how our online behaviour affects us and others. - Understand that posting inappropriately online can lead to others making assumptions about them. - Compare their communities to online communities. - Identify ways to respond to mean words online, using S-T-O-P. - Identify different reasons why someone might alter a photo or video.	Children will: - Evaluate healthy and unhealthy online media choices. - Explain why it is risky to share private information online. - Explain why it is risky to share private information online. - Describe the positives and negatives of social interaction in online games. - Recognise how to respond to cyber bullying. - Explain how copyright applies to creative work.	Children will: - Evaluate what makes a healthy media balance. - Describe the positives and negatives of social interaction in online games. - Describe the positives and negatives of social interaction in online games. - Describe the positives and negatives of social interaction in online games. - Identify strategies for dealing with cyberbullying and ways they can be an up-stander for those being bullied. - Learn about the things to watch out for when reading online news pages, such as sponsored content and advertisements.

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	is similar to staying safe in the real world. - Explain rules for travelling safely on the internet.	if they are unsure about a website.	leaves a digital footprint or "trail". - Explore what information is OK to be shared online. - Compare and contrast how they are connected to different people and places, in person and on the internet. - Demonstrate an understanding of how people can connect on the internet. - Understand what online meanness can look like and how it can make people feel. - Identify ways to respond to mean words online, using "S-T-O-P".			