Progression of Skills and Knowledge in Computing

Nursery and Reception Progression Ladders

Yellow indicates Nursery Starting Point / Green is nursery end and reception starting point / Blue is end of Reception

Understanding of the World

	4 19-24 mths	5 25-30 mths	6 31-36 mths	7 37-42 mths	8 43-48 mths	9 49-54 mths	10 55-60 mths	11 61- 66 mths	12 67-72 mths	ELG
Past and Present	Shows awareness of belonging to a small group.	Can identify significant people in their lives and talk about this in response to stimuli. Responds to photographs or digital media showing shared events/familiar people or places.	Can remember and share recent events they have been part of. Uses technologies to share experiences with others for example discussing learning journal events	Is able to talk about events in personal history and present lives, using relevant vocabulary for example, when discussing experiences/interests.	Draws on experiences from different sources to help with demonstrating an understanding that different people perform different roles in the immediate and wider community e.g. police, doctors, nurses and dentists.	Able to talk with increasing awareness about the similarities of themselves and other families, their roles and routines. Beginning to develop an awareness of some of the differences between these.	Talks about similarities and differences between themselves and others and among families and communities. Uses appropriate past and present tenses, building on new vocabulary introduced from shared experiences such as visits to local places and visitors from the community.	Talks about the lives of the immediate people around them and their roles in the wider community. Know some similarities and differences between things in the past and now, drawing on personal experiences and what has been read and shared in class from a range of sources for example fiction and non-fiction books and rhymes	Understand that lives were different in the past drawing on information shared from different sources	Talk about the lives of the people around them and their roles in society. • Know some similarities and differences between things in the past and now, drawing on their experiences and what has been read in class. • Understand the past through settings, characters and events encountered in books read in class and storytelling.

Communication and Language Development

	4 19-24 mths	5 25-30 mths	6 31-36 mths	7 37-42 mths	8 43-48 mths	9 49-54 mths	10 55-60 mths	11 61- 66 mths	12 67-72 mths	ELG
Listening, Attention and Understanding	Recognises and responds to familiar sounds. Able to focus attention on an object or person when directed to by a familiar adult. Can follow simple instructions when given visual clues or gesture. Is able to recognise and name familiar objects from a photograph or picture.	Beginning to understand simple sentences and phrases such as 'go get coat'. Beginning to understand around 500 words. Uses language to find out by asking the question 'What's that?' or 'Why?' Understands simple instructions. Links actions to words in games, action songs and rhymes	Listens to stories, songs and rhymes and asks for favourites. Can shift attention when conversation interests them. Understands longer instructions. Responds to questions with two given choices Actions demonstrate understanding of simple concepts.	Listens and attends to a dialogue in a small group of 3 or more children. Listens to and remembers simple stories with pictures Responses show an understanding of an experience or event. Can describe an action or experience in the present tense.	Anticipates key events and phrases in rhymes and stories. Listens to others and stories in small groups. Asks simple questions related to the story. Can answer simple questions about themselves. Follows instructions without visual clues Can describe how they carried out an activity or made a model.	Listens to the opinion of others when in a small group. Can follow longer, more complex instructions. Is able to retell simple stories, occasionally exploring language and vocabulary from books with adults. Understands simple who, what and where questions. Understands 'how' and 'why' questions.	Maintains attention and concentration when listening to others. Is able to respond to stories, asking questions and making comments, showing interest in new vocabulary explored. Conversations reflect basic 'back and forth' interaction. Can respond to instructions with two or more parts. Is able to demonstrate understanding in their conversations with others by responding appropriately.	Listens attentively in a range of situations Gives their attention to what others say and responds appropriately, in a 'back and forth' dialogue even whilst engaged in another activity. Draws on and uses new vocabulary accurately and in context. Follows a series of instructions involving several ideas and actions. Answers 'how' and 'why' questions about their experiences and in responses to stories or events.	Listens attentively with sustained concentration to follow a story without pictures or props. Listens to others in a larger group After listening to stories can express views about events or characters in the story and answer questions about why things happened. Carries out instructions which contain several parts in a sequence.	Listen attentively and respond to what they hear with relevant questions, comments and actions when being read to and during whole class discussions and small group interactions. Make comments about what they have heard and ask questions to clarify their understanding. Hold conversation when engaged in back-and-forth exchanges with their teacher and peers.

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Speaking	Can use up to 50 words and can put two / three words together.\nLinks words and objects asking for the name of familiar objects. Beginning to use simple questions such as, 'who that?'	Can use up to 200 words. Links three/ four words together. Frequently uses short simple sentences in everyday communications.	Links actions and words to communicate immediate needs and wants. Linking four/five words together and starting to refer to things in the past.\nUses more vocabulary including descriptive language and words which explore form or function.	Able to tell their own short story or anecdote.\nMakes requests when choosing resources and activities	Describe events that have already happened although tenses may not accurate.\nMake plans and describes them to others.	Sometimes uses past, present and future tenses appropriately in speech.\nAsks questions about events that have happened or are to happen in the future, exploring new vocabulary linked to these events.	In a range of situations, begins to offer their ideas and simple explanations. Expresses themselves using extended language drawing on new vocabulary. In sentences connectives are also beginning to be used such as 'because', 'or' and 'and'.	Expresses themselves effectively, using full sentences using past and present tenses. Demonstrates a developing use of connectives, drawing on modelled examples from teaching when talking about their experiences.\nIn different play situations such as storytelling and role play, children develop their own narratives and explanations.\nMore complex language structures are used to connect ideas or events, using new vocabulary accurately and in context.	Recounts experiences and imagine possibilities, often connecting ideas.\nUses new vocabulary in imaginative ways to add information, express ideas, explain and justify actions.	Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary. Offer explanations for why things might happen, making use of recently introduced vocabulary from stories, non-fiction, rhymes and poems when appropriate. Express their ideas and feelings about their experiences using full sentences, including use of past, present and future tenses and making use of conjunctions, with modelling and support from their teacher.

The knowledge and skills then feed into the KS1 curriculum shared below

KS1 & KS2 KNOWLEDGE, SKILLS AND UNDERSTANDING

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Programming	**Using programmable toys**	**Programming on screen**	**Programming an animation**	**Developing and Producing a simple game**	**Developing an interactive game**	**Making a text-based adventure game**
	Understand that toys can be controlled by entering a sequence of instructions Develop and record sequences of instructions as an algorithm Program a toy to follow an algorithm Predict how programs will work	Clear understanding of algorithms as sequences of instructions Convert simple algorithms to programs Predict what a simple program will do Spot and fix errors in their program	Create an algorithm for an animated scene in the form of a storyboard Write a program in scratch to create the animation Correct mistakes in their animation program	Develop an educational computer game using selection and repetition Understand and use variables Debug computer programs Recognise the importance of user interface design	Create original artwork and sound for a game Design and create a computer program for a computer game which uses sequence, selection, repetition and variables Use iterative development techniques to improve their game	Learn some of the syntax of a text-based programming language Use commands to display text on screen, accept typed user input, store and retrieve data using variables and select from a list Plan a text based adventure with multiple 'rooms' and user interaction Thoroughly debug the program
Computational Thinking	**Filming the steps of a recipe**	**Exploring how computer games work**	**Finding and correcting bugs in programs**	**Prototyping an interactive toy**	**Cracking codes**	**Mastering algorithms for searching, sorting and mathematics**
	Break down a process into simple steps as an algorithm Use different features of a video camera Use a video camera to capture moving images Develop collaborative skills Discuss work and think about how it can be improved	Describe what happens in computer games Use logical reasoning to make predictions on what a program will do Test predictions Think critically about a game Be aware of how to use games safely	Develop strategies for finding errors in programs Build up resilience and strategies for problem solving Increase knowledge and understanding of Scratch Recognise a number of common types of bug in software	Design and make an on screen prototype of a computer controlled toy Understand different forms of input and output Design, write and debug the control and monitoring program for their toy	Be familiar with semaphore and Morse Code Understand the need for private information to be encrypted Encrypt and decrypt messages in simple ciphers Appreciate the need to use complex passwords and to keep them secure Have some understanding of how encryption works on the web	Develop the ability to reason logically about algorithms Understand how some key algorithms can be expressed as programs Understand that some algorithms are more efficient than others for the same problem Understand common algorithms are more efficient than others of the same problems Understand common algorithms for sorting and searching Appreciate algorithmic approaches to problems in mathematics
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**

Creativity	**Illustrating an eBook** Use the web safety to find ideas for an illustration Select and use appropriate painting tools to create and change images on the computer Create an illustration for a particular purpose Know how to save and retrieve and change their work Reflect on work	**Taking, selecting and editing digital images** Consider the technical and artistic merits of photographs Use a digital camera or camera app Take digital photographs Edit and enhance their photographs	**Videoing performance** Gain skills in shooting live video Edit video clips Understand the qualities of effective video	**Producing digital music** Use one or more program to edit music Create and develop a musical composition Develop an awareness of how music can enhance work in other media	**Fusing geometry and art** Develop an appreciation of the links between geometry and art Become familiar with the tools and techniques of a vector graphics program Develop an understanding of turtle graphics Experiment with tools and refine and develop their work Develop awareness of computer generated are	**Creating short television ads** Think critically about how video is used to promote a cause Storyboard an effective advert for a cause Work collaboratively to shoot audible original footage and source additional content, acknowledging intellectual property rights Work collaboratively to edit the assembled content to make an effective advert
Computer Networks	**Finding images using the web** Find and use pictures on the web Know what to do if they find a picture that causes concern Group images based on binary (yes/no) Organise images into two groups Sort images according to a criteria Ask questions about images	**Researching a topic** Search the internet for information Improve note taking through mapping Develop presentation skills through creating and delivering a short multimedia presentation	**Making and sharing a short screencast presentation** Understand the physical hardware connections necessary for computer networks to work Understand some features of internet protocols Understand some diagnostic tools for investigating network connections Develop a basic understanding of how domain names are converted to IP addresses	**Editing and Writing HTML** Understand how the internet makes the web possible Use HTML tags for elementary mark up Use hyperlinks to connect ideas and sources Understand the risks of using the web	**Creating a web page** Develop research skills to know what information is appropriate Understand some elements of how search engines select and rank ideas Question the plausibility and quality of information Develop and refine ideas and text Show their understanding of safety and responsible use of technology	**Exploring computer networks including the internet** Appreciate that computer networks transmit and receive information digitally Understand the basic hardware needed for computer networks to work Understand key features of internet communications protocols Develop a basic understanding of how domain names are converted to numerical IP addresses
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**

	Producing a talking book	Communication clues	Communicating safely on the internet	Producing a wiki	Sharing experiences and opinions	Create a Yearbook
Communication & Collaboration	Use sound recording to record sounds Develop skills in saving and storing sounds on the computer Understand how a talking book differs from a paper book Share recordings with an audience	Understand that email can be used to communicate Develop skills in opening, composing and sending emails Opening and listening to audio files Use appropriate language in emails Develop skills in editing and formatting text in emails Be aware of e-safety when using email	Develop a basic understand of how email works Gain skills in using email Be aware of issues surrounding emails, including 'netiquette' and safety Work with a remote partner Experience video conferencing	Understand the conventions for collaborative online work, particularly in wikis Become familiar with Wikipedia, including potential problems with its use Use a wiki too to write for a target audience	Become familiar with blogs as a medium and a genre of writing Create a sequence of blog posts on a theme Incorporate additional material in a blog Comment on the posts of others Develop a critical, reflective view of a range of media	Manage or contribute to large collaborative projects, facilitated using online tools Write and review content Source digital media while demonstrating safe, respectful and responsible use Design and produce a high quality a high-quality print document
	Creating a card electronically	**Recording Bug Hunt data**	**Collecting and analysing data**	**Presenting the weather**	**Creating a virtual space**	**Using media and mapping to document a trip**
Productivity	Develop basic keyboard skills through typing and formatting text Develop basic mouse skills Use the web to find and select images Develop skills in storing and retrieving files Develop sills in combining text and images	Sort and classify a group of items by answering questions Collect data using tick charts or tally charts Use simple charting software to produce pictograms and other basic charts Take, edit and enhance photographs Record information on a digital map	Understand some elements of survey design Understand some ethical and legal aspects of online data collection Use the web to facilitate data collection Gain skills in using charts to analyse data Gain skills in interpreting results	Understand different measurements techniques for weather both analogue and digital Use computer based data logging to automate the recording of some weather data Use spread sheets to create charts Analyse data, explore inconsistencies in data and make predictions Practise using presentation software	Understand the work of architects, designers and engineers working in 3D Develop familiarity with a simple CAD tool Develop spatial awareness by exploring and experimenting with a 3D virtual environment	Research a location online using a range of resources appropriately Understand the safe use of mobile technology, including GPS Capture images, audio and video while on location Showcase shared media content through a mapping layer