

Computing

The computing curriculum at Preston follows The **National Centre for Computing Education (NCCE)** and promoted by the Department for Education and supporting partners, it marks a significant investment in improving the provision of computing education in England. Each year group is supported by carefully structured lessons and assessments.

Every lesson has online safety as a common theme that is reinforced through different contexts and applications – this is also supported more broadly in the curriculum with our PSHE sessions on digital safety and other activities that support and embed the importance of staying safe online.

Reception

Topics / Units		
Autumn	Spring	Summer
Technology all around us	Digital art	Coding using Bee Bots
Technology to be used to enhance learning throughout all areas of the EYFS		

Year 1 and 2

Topics / Units						
Year	Autumn		Spring		Summer	
A	Technology all around us	Digital planning	Moving a robot	Grouping data	Digital writing	Programming animations
B	IT around us	Digital photography	Robot algorithms	Pictograms	Digital music	Programming quizzes
Code		Connect		Communicate		Collect
National Curriculum purpose: The national curriculum for computing aims to ensure that all pupils: can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation				Chris Quigley Breadth of study: • Understand 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.		

can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems are responsible, competent, confident and creative users of information and communication technology.	• Use logical reasoning to predict the behaviour of simple programs. • Organise, store, manipulate and retrieve data in a range of digital formats. • Communicate safely and respectfully online, keeping personal information private and recognise common uses of information technology beyond school.
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Year 3 and 4

Topics / Units						
Year	Autumn		Spring		Summer	
A	Connecting computers	Stop frame animation	Sequencing sounds	Branching databases	Desktop publishing	Events, actions and programs
B	Internet	Audio production	Repetition of shape	Data logging	Photo editing	Repetition in games
Code		Connect		Communicate		Collect
National Curriculum purpose: The national curriculum for computing aims to ensure that all pupils: can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems are responsible, competent, confident and creative users of information and communication technology.				Chris Quigley Breadth of study: • Design and write programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. • Use sequence, selections and repetition in programs; work with variables and various forms of input and output; generate appropriate inputs and predicted outputs to test programs. • Use logical reasoning to explain how a simple algorithm works, detect and correct errors in algorithms and programs. • 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.		

	• Describe how internet search engines find and store data; use search engines effectively; be discerning in evaluating digital content; respect individuals and intellectual property; use technology responsibly, securely and safely. • Select, use and combine a variety of software (including internet services) on a range of digital devices to accomplish given goals, including collecting, analysing, evaluating and presenting data and information.
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Year 5 and 6

Topics / Units						
Year	Autumn		Spring		Summer	
A	Communication and collaboration	Web page creation	Variables in games	Spreadsheets	3D Modelling	Sensing movement
B	Systems and searching	Video production	Physical computing	Flat file databases	Vector graphics	Selections in quizzes
Code		Connect		Communicate		Collect
National Curriculum purpose: The national curriculum for computing aims to ensure that all pupils: can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems are responsible, competent, confident and creative users of information and communication technology.				Chris Quigley Breadth of study: • Design and write programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. • Use sequence, selections and repetition in programs; work with variables and various forms of input and output; generate appropriate inputs and predicted outputs to test programs. • Use logical reasoning to explain how a simple algorithm works, detect and correct errors in algorithms and programs.		

	• 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. • Describe how internet search engines find and store data; use search engines effectively; be discerning in evaluating digital content; respect individuals and intellectual property; use technology responsibly, securely and safely. • Select, use and combine a variety of software (including internet services) on a range of digital devices to accomplish given goals, including collecting, analysing, evaluating and presenting data and information.
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Areas of learning (themes) for continual assessment and monitoring throughout the year groups.

	Context/topic questions		Themes			
			Code	Connect	Communicate	Collect
A	Year 1/2	Recognising technology in school and using it responsibly.		X	X	
		Choosing appropriate tools in a program to create art, and making comparisons with working non-digitally.			X	X
		Writing short algorithms and programs for floor robots, and predicting program outcomes.	X		X	
		Exploring object labels, then using them to sort and group objects by properties.		X		
		Using a computer to create and format text, before comparing to writing non-digitally.		X	X	
B		Designing and programming the movement of a character on screen to tell stories.	X		X	
		Identifying IT and how its responsible use improves our world in school and beyond.			X	

		Capturing and changing digital photographs for different purposes.		X		
		Creating and debugging programs, and using logical reasoning to make predictions. Collecting data in tally charts and using attributes to organise and present data on a computer.	X			X
		Using a computer as a tool to explore rhythms and melodies, before creating a musical composition. Designing algorithms and programs that use events to trigger sequences of code to make an interactive quiz	X X			
A	Year 3 /4	Identifying that digital devices have inputs, processes, and outputs, and how devices can be connected to make networks. Capturing and editing digital still images to produce a stop frame animation that tells a story		X X	X	
		Creating sequences in a block-based programming language to make music. Building and using branching databases to group objects using yes/no questions.	X			X
		Creating documents and modifying text, images and page layouts for a specific purpose. Writing algorithms and programs that use a range of events to trigger sequences of actions.	X			
	B	Recognising that the internet is a network of networks including the WWW, and why we should evaluate online content. Capturing and editing audio to produce a podcast, ensuring that copyright is considered.		X X	X	
		Using a text-based programming language to explore count-controlled loops when drawing shapes.	X			

		Recognising how and why data is collected over time, before using data loggers to carry out an investigation,				X
		Manipulating digital images, and reflecting on the impact of the changes and whether the required purpose is fulfilled. Using a block-based programming language to explore count-controlled and infinite loops when creating a game.	X			
A	Year 5 /6	Exploring how data is transferred by working collaboratively online. Designing and creating webpages, giving consideration to copyright, aesthetics and navigation.		X	X	X
		Exploring variables when designing and coding a game. Answering questions by using spreadsheets to organise and calculate data.	X			X
		Planning, developing, and evaluation 3D computer models of physical objects. Designing and coding a project that captures inputs from physical devices.				X
B		Recognising IT systems in the world and how some can enable searching on the internet. Planning, capturing, and editing video to produce a short film.		X	X	
		Exploring conditions and selection using a programmable microcontroller. Using a database to order data and create charts to answer questions.				X
		Creating images in a drawing program by using layers and groups of objects. Exploring selection in programming to design and code an interactive quiz.		X		