



Computing curriculum

At Northlew C of E Primary and Nursery School, we believe in giving children the skills needed for the 21st Century – computing is a key component of this. Our curriculum is designed to give our learners the skills and knowledge needed to access computing technology.

The computing curriculum is designed to build upon knowledge and skills with technology with a strong thread of online safety.

At all times the skills and knowledge practiced will be linked to contextualised applications with links to science, maths and other curriculum areas.

Programme of study

EYFS			
Subject	Knowledge	Skills	Key Vocabulary
	<p>Children know that technology can be used for a range of purposes at home and school</p> <p>Children can name a range of technology devices and uses (<i>e.g. 'You use your computer to take the register and it sends it to Mrs Chapman so she can see it on her computer'</i>)</p> <p>Children know that information can be retrieved from technology</p>	<p>Children can use technology to complete simple games and programs</p> <p>Children can use technology to retrieve simple information (<i>e.g. Using voice control to find pictures of animals</i>)</p> <p>Children can express their ideas using technology (<i>e.g. using drawing programs</i>)</p> <p>Children can explain uses of technology at home and school</p>	<p>Device</p> <p>Technology</p> <p>Computer</p> <p>Information</p>

Year 1			
Subject	Knowledge	Skills	Key Vocabulary
<p>Understanding algorithms and e-safety</p> <p>Create and de-bug simple programmes and e-safety</p>	<p>Children know that an algorithm is a set of instructions</p> <p>Children understand that devices follow algorithms precisely and unambiguously</p> <p>Children know how to create a simple algorithm</p>	<p>Children can create a simple algorithm</p> <p>Children can test a simple algorithm</p> <p>Children can de-bug a simple algorithm</p> <p>Children can create a simple program</p>	<p>Algorithm</p> <p>Program</p> <p>Bug</p> <p>De-bug</p> <p>Digital</p> <p>Digital content</p> <p>e-safety</p> <p>online safety</p>

<p>Digital literacy and e-safety</p>	<p>Children know that a program is a set of instructions that execute a task</p> <p>Children know that a program is created by a set of algorithms</p> <p>Children know how to create digital content (<i>e.g. word processing documents</i>)</p> <p>Children know how to save digital content</p> <p>Children know how to retrieve digital content</p> <p>Children know what personal information is</p> <p>Children know that they should not share personal information online (including photos)</p> <p>Children can recognise online threats to their safety</p> <p>Children know where to seek help with online safety</p>	<p>Children can test a simple program</p> <p>Children can de-bug a simple program</p> <p>Children can create digital content</p> <p>Children can save digital content</p> <p>Children can retrieve digital content</p> <p>Children can use online safety tools</p> <p>Children use a computer programme to create art</p>	
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Year 2			
Subject	Knowledge	Skills	Key Vocabulary
<p>Logical reasoning and e-safety</p>	<p>Children know that technological devices are unambiguously and precisely logical</p>	<p>Children can predict the behavior of a program using logical reasoning</p>	<p>Logic</p> <p>Logical reasoning</p>
<p>Digital literacy beyond school and e-safety</p>	<p>Children know that programs are defined by algorithms and will follow them logically</p>	<p>Children can create digital content using a range of programs</p>	<p>Folders</p>

Digital content and e-safety	<p>Children know how to use a range of programs at home and school</p> <p>Children can create digital content beyond school (<i>e.g. creating posters using digital photos, publishing programs</i>)</p> <p>Children know how to organise digital content using folders and sub folders</p> <p>Children know how to manipulate digital content</p> <p>Children know common methods of stealing personal information</p> <p>Children know what safe online groups look like</p>	<p>Children can create digital content outside of the school environment</p> <p>Children can organise digital content in folders and sub folders</p> <p>Children can manipulate digital content</p> <p>Children can spot unsafe content</p> <p>Children can use a program to create music</p> <p>Children can use a program to create and manipulate photos</p>	
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Year 3			
Subject	Knowledge	Skills	Key Vocabulary
<p>Connecting computers</p> <p>Graphics and presentations including research and e-safety</p> <p>Sequencing in music</p> <p>Building databases</p> <p>Desktop publishing</p>	<p>Children understand how devices connect to one another</p> <p>Children understand the benefits and functions of connected devices</p> <p>Children know how to use graphic programs</p> <p>Children know how to create an animation</p> <p>Children know how to design simple programs</p> <p>Children know how to create simple programs</p>	<p>Children can connect a device to others</p> <p>Children can create graphics and animations using technology</p> <p>Children can design a program to complete a given task</p> <p>Children can create a program to complete a given task</p>	<p>Connections</p> <p>Internet</p> <p>Wireless</p> <p>Data</p> <p>Graphics</p>

	<p>Children know how to de-bug simple programs</p> <p>Children understand the use of data storing and sorting programmes</p> <p>Children know how to use programs to create a document</p>	<p>Children can de-bug a simple program to complete a given task</p> <p>Children can store, sort and retrieve data</p> <p>Children can present information using programs</p>	
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Year 4			
Subject	Knowledge	Skills	Key Vocabulary
<p>Working with Data and e-safety</p> <p>Networks and communications and e-safety</p> <p>Audio editing</p>	<p>Children know how to organise data on digital programs (<i>e.g. spreadsheets</i>)</p> <p>Children use data stored digitally to create charts and graphs</p> <p>Children understand computer networks such as the internet</p> <p>Children know that technology can be used to communicate instantly with people around the world</p> <p>Children know how to be safe when communicating via digital technology (<i>acceptable use</i>)</p> <p>Children know how digital data can be manipulated to mislead readers</p> <p>Children know they have a responsibility to act respectfully online.</p>	<p>Children can organise data and retrieve information from digital data sources</p> <p>Children can represent data</p> <p>Children can use networks to communicate with others</p> <p>Children can identify unsafe uses of computer networks</p> <p>Children can record and edit audio using digital devices.</p> <p>Children can create and edit photos using digital devices</p>	<p>Data sources</p> <p>Communications networks</p>

	<p>Children know how to use digital devices to record audio</p> <p>Children know how to edit audio in digital files</p> <p>Children understand the use of digital devices for photos</p>		
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Year 5			
Subject	Knowledge	Skills	Key Vocabulary
<p>Video editing</p> <p>Databases</p> <p>Selection</p>	<p>Children know how to use programs to enhance presentations</p> <p>Children know how communication networks can be used to work collaboratively</p> <p>Children know how to correct algorithms in their programs</p> <p>Children know how collaborative working can be manipulated positively and negatively</p> <p>Children understand the role of technology and digital devices in the creation of video</p> <p>Children understand the purposes and functions of databases</p> <p>Children understand binary coding and how this enables selection for a variety of purposes</p>	<p>Children can create presentations using programs to enhance</p> <p>Children can work collaboratively on a single piece of content</p> <p>Children can identify when images have been manipulated</p> <p>Children can explain how algorithms work</p> <p>Children can create and edit video</p> <p>Children can create, sort and retrieve data from a data base</p> <p>Children use selection for a variety of purposes</p>	<p>Collaborative working</p> <p>Databases</p> <p>Coding</p>

Year 6

Subject	Knowledge	Skills	Key Vocabulary
<p>Communications</p> <p>Websites</p> <p>Spreadsheets</p> <p>Variables</p> <p>Modelling</p> <p>Sensing</p>	<p>Children know how to safely communicate using technology and devices</p> <p>Children know how to use the internet safely to search for content</p> <p>Children understand how search results are ranked</p> <p>Children recognise the features of a website and how to use these for various functions</p> <p>Children understand the use of a variable in programming</p> <p>Children understand the function and purpose of spreadsheets</p> <p>Children understand the use of 3D modelling</p> <p>Children understand the use of laser and other sensing tools in technology</p>	<p>Children can use the internet to safely search for content</p> <p>Children can create a basic website</p> <p>Children can use a variable to affect a program</p> <p>Children can use spreadsheets to organise and retrieve data</p> <p>Children can create 3D models using technology</p> <p>Children can use lasers and other sensing tools to affect a program.</p>	<p>Search ranking</p> <p>Functions</p> <p>Modelling</p> <p>Sensing</p> <p>Variables</p>

Computing progression

		Year 1/2	Year 3/4	Year 5/6
Computing	Computer science	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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 <p>Pupils learn to program a basic floor turtle such as a BeeBot to navigate increasingly complex routes and are able to debug their instructions when the turtle does not reach the intended destination</p> <p>Pupils learn to program an onscreen app such as BeeBot or Kodable to complete a set task and are able to debug their instructions when the turtle does not reach the intended destination</p> <p>Pupils use a more complex turtle with standard units to navigate increasingly complex routes, and are able to debug their instructions when the turtle does not reach the intended destination</p>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • design write and debug programs that accomplish specific goals,.....solve problems by decomposing them in smaller parts • use sequence, selection and repetition in programs • use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs <p>Pupils learn to use graphical programming language, such as Scratch or Logo to draw regular 2D shapes. Pupils add loops or procedures to create a repeating pattern</p> <p>Pupils learn to sequence instructions, for instance to create an animation using Scratch, or by using the timing features in PowerPoint</p> <p>Pupils write a simple algorithm, for instance to create a basic traffic light sequence. They then use flowcharting software (such as Go or Flowgo) to create a simple program to control an onscreen icon</p>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • design, write and debug programs that accomplish specific goals; including controlling or simulating physical systems and solving 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 program <p>Pupils write a simple algorithm, for instance to create a basic traffic light sequence. They then use flowcharting software to create a simple program to control an onscreen icon. They are able to explain how their program works</p> <p>Pupils create a computer game, using a graphical language such as Scratch or Kodu</p>

Computing	Computer Science Cont.	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • recognise common uses of information technology beyond school <p>Pupils learn about some of the uses of the internet</p>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • recognise common uses of information technology beyond school <p>Pupils learn to collaborate electronically by blogging - mailing and working on shared documents using the pupil sites of the DLG</p>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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 <p>Pupils learn to collaborate electronically by blogging -mailing, and working on shared documents using the pupil sites of the DLG. This can be extended to working with other schools</p> <p>Pupils learn that connected devices exchange packets of data and this can convey a range of information from a text to a video call</p>
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		Year 1/2	Year 3/4	Year 5/6
Computing	Digital literacy	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content on the internet or other online technologies <p>Pupils learn that the Internet is a great place to develop rewarding online relationships and learn to recognise websites that are good for them to visit; but they also learn to be cautious and to check with a trusted adult before sharing private information</p> <p>Pupils are introduced to the concept that real people send messages to one another on the Internet and learn how messages are sent and received. They recognise that it may be difficult to distinguish between someone who is real and someone who is not</p> <p>Pupils are introduced to the basics of online searching</p> <p>Pupils learn to explore websites and to say whether they like them or not and why</p>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • Use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concerns about content and contact <p>Pupils learn that the Internet is a great place to develop rewarding online relationships and learn to recognise websites that are good for them to visit; but they also learn to be cautious and to check with a trusted adult before sharing private information</p> <p>Pupils learn to make good passwords for their accounts, learn about spam and how to deal with it. They begin to understand the implications for the information that they share online and how some websites might use that information without their knowledge</p> <p>Pupils are introduced to their roles as digital citizens in an online community, where they reflect on how they are responsible not only for themselves but for others, in order to create a safe and comfortable environment</p> <p>Pupils learn that the Internet is a public space and then develop the skills to protect their privacy and respect the privacy of others</p>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concerns about content and contact <p>Pupils learn that the internet is a great place where online relationships can be developed. They compare and contrast online friends and real life, face to face friends and learn how to respond if an online friend asks them a personal question</p> <p>Pupils learn to create secure passwords for their accounts, learn about spam and how to deal with it, and decode website privacy policies, understanding the implications for the info that they share online</p> <p>Pupils explore their roles as digital citizens in an online community, where they reflect on their responsibilities and learn that good digital citizens are responsible and respectful in the digital world</p> <p>Pupils begin to explore the nature of online audiences and permanency of information online. They begin to understand the significance of published information and personal information</p>

<p>Computing</p>	<p>Digital literacy Cont.</p>	<p>Pupils explore how they interact with others and are introduced to the concept of cyberbullying. They also learn how to communicate to be a responsible member of a connected culture effectively in order to prevent miscommunication</p> <p>use search technologies effectively, appreciate how results are selected and ranked and be discerning in evaluating digital content</p> <p>Pupils are introduced to the basics of online searching, including how to use effective keywords. They also learn to conduct searches that provide them with the most helpful and relevant information</p>	<p>Pupils understand what it means to be a good digital citizen as they interact with others online by understanding how to prevent and respond to cyberbullying. They also learn how to communicate effectively to prevent miscommunication in order to be a responsible member of a connected culture</p> <p>Pupils begin to consider the impact of their online presence on their own self- image and the way others see them and explore how to construct a positive online profile</p> <p>Pupils learn the ‘do’s and don’ts’ of copying and pasting information to avoid plagiarism. They learn how to avoid plagiarism by putting information in their own words, putting excerpted information into quotes, and providing citations. They learn to show respect for other people’s creations by giving them credit</p> <p>use search technologies effectively, appreciate how results are selected and ranked and be discerning in evaluating digital content</p> <p>Pupils explore issues relating to online searching, including how to use effective keywords, using directories and subject categories, and how to analyse the usefulness and relevancy of the results. They learn to conduct searches that provide them with the most helpful and relevant information</p> <p>Pupils develop skills for evaluating websites, online information and advertising by rating the trustworthiness and usefulness of websites, and learning to identify the different types of online advertising</p>
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		Year 1/2	Year 3/4	Year 5/6
Computing	ICT	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • use technology purposefully to create, organise, store, manipulate and retrieve digital content <p>Digital Publishing: Pupils learn to use basic word processing package and to write and illustrate a short story</p> <p>Presentation: Pupils learn to make simple presentations</p> <p>Graphics: Pupils learn to create a simple digital painting</p> <p>Animations: Pupils learn to make a simple animation for instance in Puppet Pals</p> <p>Media: Pupils learn to use digital cameras and microphones for a purpose</p> <p>Working with data: Pupils learn to create and use a pictogram</p> <p>Modelling: Pupils explore online simulations such as Charlie Chimp</p>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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 <p>Digital Publishing: Pupils learn how to use software to create an e-book, brochure or poster on a given subject</p> <p>Presentations: Pupils learn to write and deliver a presentation on a given subject</p> <p>Graphics: Pupils learn how to take, adapt or create images to enhance or further develop their work</p> <p>Animations: Pupils learn how to develop a storyboard and then create a simple animation using for instance 'Puppet Pals' or 'Stop Motions' Animation'</p> <p>Sound and video: Pupils record and edit media to create a short sequence</p> <p>Working with data: Pupils learn to search, sort and graph information</p>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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 <p>Digital Publishing: Pupils learn how to use software to create an e-book, brochure or poster on a given subject, incorporating a range of media</p> <p>Presentations: Pupils learn to write and deliver a presentation, incorporating a range of media</p> <p>Graphics: Pupils learn how to take, adapt or create images to enhance or further develop their work and incorporate it in a wider project</p> <p>Animations: Pupils learn how to develop a storyboard and then create a simple animation using for instance Puppet pals' or 'Stop Motions Animation' - this may be extended by editing the final product in using video editing software</p> <p>Sound and video: Pupils record and edit media to create a short sequence - extended by editing the final product in using video editing software</p> <p>Working with data: Pupils learn to search, sort and graph information</p> <p>Modelling: Pupils learn how to use a spreadsheet to model data</p>