

Uplands Infant School: Computing Medium Term Plan

Computer Science

(How computers and computer systems work and how they are designed and programmed)

Information Technology

(The purposeful use of existing programs to develop products and solutions)

Digital Literacy

(The skills, knowledge and understanding needed in order to participate fully and safely in an increasingly digital world)

A- Problem Solving: understand what algorithms are; how they are implemented as programs on digital devices; and that programs work by following precise and unambiguous instructions

B- Programing: create and debug simple programs

C- Logical Thinking: use logical reasoning to predict the behaviour of simple programs

D- Creating Content: use technology purposefully to create, organise, store, manipulate and retrieve digital content

E- Using IT beyond school: recognise common uses of information technology beyond school

F- Online Safety: 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

End of Year Group Expectations			
Nursery	Reception	Year One	Year Two
<p>At the end of Nursery, it is expected that most children will:</p> <ul style="list-style-type: none"> • Have an awareness of how to be safe online. Know whom to go to for help and support. • Begin to understand different types of technology around us and their purpose. • Begin to be able to operate mechanical toys. 	<p>At the end of Reception, it is expected that most children will:</p> <ul style="list-style-type: none"> • Show an understanding of how to be safe online. Know whom to go to for help and support. • Show an understanding of the different types of technology around us and be able to explain their purpose. • Have an understanding that computers can be used to retrieve information and the internet can be used to play and learn. • Be able to show skill in using mechanical toys. • Use technology to take pictures and videos. 	<p>At the end of Year One, it is expected that most children will:</p> <ul style="list-style-type: none"> • Know and understand the rules of staying safe online. Know whom to go to for help and support. Know how to safely log on and off from SeeSaw. • Develop their understanding of technology and how it can help them. Know how to use the different components of a computer (e.g. a mouse, keyboard,). • Know how to programme a robot by giving it simple commands and begin to create animation using on-screen programming. • Use digital media to explore creating and changing text. • Use digital media to create paintings. • Be able to group and label objects to answer questions about data. 	<p>At the end of Year Two, it is expected that most children will:</p> <ul style="list-style-type: none"> • Know and understand the rules of staying safe online. Know whom to go to for help and support. Understand what is appropriate/inappropriate behaviour online. Know how to safely log on and off from SeeSaw and websites. • Learn how IT is used for good in our lives, how technology is used in our homes, and how it benefits society. • Develop an understanding of using programming to create a sequence of instructions and predict outcomes. Use on-screen programming to show an understanding of a sequence of commands creating an outcome. • Be able to organise and present data in the form of pictograms and block diagrams • Create music using percussion instruments and digital tools.

	Key concept: <u>To connect</u> (Developing an understanding of how to safely connect with others)	Key concept: <u>To communicate</u> (Using apps to communicate ideas)	Key concept: <u>To code</u> (Developing an understanding of instructions, logic, and sequences)	Key concept: <u>To collect</u> (Developing an understanding of databases and their uses)
Nursery	<p><u>E-safety</u></p> <p>(NC objective F – Digital Literacy)</p> <p>Children learn about ‘Stranger Danger’ through the book Goldilocks and the Three Bears. They learn about the importance of being safe and never wandering alone. They also know whom they can go to if they need help.</p>		<p><u>Technology around us</u></p> <p>(NC objective E – Computer Science)</p> <p>Children are exposed to a range of toys with buttons, flaps, and simple mechanisms in the continuous provision and begin learning to operate them.</p> <p>They begin learning to operate mechanical toys e.g. turn the knob on a wind-up toy or pull back a friction car.</p>	

Reception Term 1	<u>E-safety</u> (NC objective F – Digital Literacy) Children will focus on Smartie the Penguin and use this to discuss how to keep safe online. They learn about the importance of sharing their worries with a trusted adult and asking for help whenever they need it.		<u>Technology around us</u> (NC objective E – Computer Science) Children are exposed to a range of technology in the continuous provision e.g. remote controlled cars, walkie-talkies interactive pets, and digital cameras, and begin to understand that technology is used for a particular purpose. They show skill in making toys work by pressing parts or lifting flaps to achieve effects such as sound, movements, or new images.	
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<p>Reception Term 2</p>			<p><u>Technology around us</u></p> <p>(NC objective E – Computer Science)</p> <p>Children know that information can be retrieved from computers. They become aware that the internet can be used to play and learn, with the support of a trusted adult.</p>	
<p>Reception Term 3</p>		<p><u>Creating media – Digital photography</u></p> <p>(NC objective D – Information Technology)</p> <p>Children will use iPads within the continuous provision to take photographs or videos and begin to use the voice recording tool to share their learning on Seesaw.</p>		

Year 1 Autumn 1	<u>E-safety</u> (NC objective F – Digital Literacy) Children learn that they can go to exciting places online, but they need to follow certain rules to remain safe. They create online safety rules e.g. never talking to strangers online, and never sharing pictures, or personal information e.g. name, or address. They seek help from an adult when they see something that is unexpected or worrying. Children also demonstrate how to safely log on and log off from Seesaw.		<u>Technology around us</u> (NC objective E – Computer Science) Children develop their understanding of technology and how it can help them. They will become more familiar with the different components of a computer by developing their keyboard and mouse skills and also start to consider how to use technology responsibly.	
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Year 1 Autumn 2	<u>Creating media – Digital writing</u> (NC objective F – Digital Literacy) Children will familiarise themselves with typing on a keyboard or iPad and using Seesaw responsibly. They will understand the importance of not sharing their personal information with others.	<u>Creating media – Digital writing</u> (NC objective D – Information Technology) Children will gain an understanding of the various aspects of using a computer to create and change the text. They will begin using tools to change the look of their writing, and then they will consider the differences between using a computer and writing on paper to create text.		
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Year 1 Spring 1			<u>Programming A – Moving a robot</u> (NC objective A, B, C, E – Computer Science) This unit introduces children to early programming concepts. They will explore using individual commands, both with other children and as part of a computer program. Children will also identify what each floor robot command does and use that knowledge to start predicting the outcome of programs. Children are also introduced to the early stages of program design through the introduction of algorithms.	
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Year 1 Spring 2			<u>Programming B – Introduction to animation</u> (NC objective A, B, C – Computer Science) This unit introduces children to on-screen programming through ScratchJr. Children will explore the way a project looks by investigating sprites and backgrounds. They will use programming blocks to use, modify, and create programs. Children are also introduced to the early stages of program design through the introduction of algorithms.	
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<p>Year 1 Summer 1</p>		<p><u>Creating media – Digital painting</u></p> <p>(NC objective D – Information Technology)</p> <p>(NC objectives 3 and 4 in Art and Design)</p> <p>Children will explore the world of digital art and its exciting range of creative tools.</p> <p>This unit empowers them to create their own paintings while getting inspiration from a range of other artists.</p> <p>They consider their preferences when painting with, and without, the use of digital devices.</p>		
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<p>Year 1 Summer 2</p>	<p><u>Data and information – Grouping Data</u></p> <p>(NC objective F – Digital Literacy)</p> <p>Children will use technology safely and respectfully to group data based on their properties. They will keep recorded information private and only share what they have found with a trusted adult.</p>			<p><u>Data and information – Grouping Data</u></p> <p>(NC objective D – Information Technology)</p> <p>(NC objective F – Digital Literacy)</p> <p>Children will begin by using labels to put objects into groups and label these groups.</p> <p>Children will demonstrate that they can count a small number of objects, before and after the objects are grouped.</p> <p>They will then begin to demonstrate their ability to sort objects into different groups, based on the properties they choose.</p> <p>Finally, children will use their ability to sort objects into different groups to answer questions about data.</p>
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Year 2 Autumn 1	<p><u>E-safety</u></p> <p>(NC objective F – Digital Literacy)</p> <p>Children recap what they have previously learned in Year 1 about ways to keep themselves safe online and why it is important to do so. They can identify what things count as personal information, identify what is appropriate and inappropriate behaviour on the internet, and agree and follow sensible online safety rules, e.g. taking pictures, sharing information, storing passwords, and seeking help from an adult when they see something that is unexpected or worrying. They also demonstrate how to safely log on and log off from websites and Seesaw.</p>		<p><u>IT around us</u></p> <p>(NC objective E – Computer Science)</p> <p>Children learn how information technology (IT) is being used for good in our lives. With an initial focus on IT in the home, children explore how IT benefits society in places such as shops, libraries, and hospitals. Whilst discussing the responsible use of technology, and how to make smart choices when using it.</p>	
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Year 2 Autumn 2	<p><u>Creating media – Digital photography</u></p> <p>(NC objective F – Digital Literacy)</p> <p>Children will safely use different devices to capture photographs and understand the importance of what an acceptable photograph is and why it is vital to seek permission when taking photos of others.</p> <p>They will use this knowledge and apply it responsibly when sharing photographs on Seesaw.</p>	<p><u>Creating media – Digital photography</u></p> <p>(NC objective D – Information Technology)</p> <p>Children will gain experience capturing, editing, and improving photos.</p> <p>They will use this knowledge to recognise that some images they see may not be real.</p>	<p><u>Creating media – Digital photography</u></p> <p>(NC objective E – Computer Science)</p> <p>Children will learn to recognise that different devices can be used to capture photographs.</p>	
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Year 2 Spring 1			<p><u>Programming A – Robot algorithms</u></p> <p>(NC objective A, B, C – Computer Science)</p> <p>(NC objective F – Digital Literacy)</p> <p>This unit develops children’s understanding of instructions in sequences and the use of logical reasoning to predict outcomes.</p> <p>Children will use given commands in different orders to investigate how the order affects the outcome.</p> <p>Children will also learn about design in programming. They will develop artwork and test it for use in a program. They will design algorithms and then test those algorithms as programs and debug them.</p>	
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Year 2 Spring 2

Programming B – An introduction to quizzes

(NC objective A, B, C –
Computer Science)

This unit initially recaps learning from the Year 1 Scratch Junior unit 'Programming B - Introduction to animation'.

Children begin to understand that sequences of commands have an outcome and make predictions based on their learning. They use and modify designs to create their own quiz questions in ScratchJr and realise these designs in ScratchJr using blocks of code.

They evaluate their work and make improvements to their programming projects.

Year 2 Summer 1		<p><u>Creating media – Making music</u></p> <p>(NC objective D – Information Technology)</p> <p>(NC objectives 2, 3, and 4 in Music).</p> <p>Children will explore how music can make them think and feel.</p> <p>They will make patterns and use those patterns to make music with both percussion instruments and digital tools.</p> <p>They will also create different rhythms and tunes, using the movement of animals for inspiration.</p> <p>Finally, children will share their creations and compare creating music digitally and non-digitally.</p>		
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Year 2 Summer 2	<p><u>Data and information – Grouping Data</u></p> <p>(NC objective F – Digital Literacy)</p> <p>Children will use technology safely and respectfully to present data and only share what they have found with a trusted adult.</p>			<p><u>Data and information – Pictograms</u></p> <p>(NC objective D – Information Technology)</p> <p>(NC objectives 1, 2, and 3 for Statistics in Maths)</p> <p>Children will be introduced to the term ‘data’. They will begin to understand what data means and how this can be collected in the form of a tally chart. They will learn the term ‘attribute’ and use this to help them organise data.</p> <p>Children will then progress on to presenting data in the form of pictograms and finally block diagrams.</p> <p>They will use the data presented to answer questions.</p>
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