

Burradon Community Primary School

Computing Progression of Learning

	Pre School	EYFS	Key Stage 1	Key Stage 2
Computer Science	There are no statutory requirements for Computing within a pre-school setting however, many parts of the pre-school curriculum develop a basic foundational knowledge for computing. This includes activities within (but not limited to) the three prime areas to support problem-solving, creativity, and digital literacy.	- Show skill in making toys work by pressing parts or lifting flaps to achieve effects such as sound, movements or new images. - Complete a simple program on a computer. - Use ICT hardware to interact with age-appropriate computer software.	- 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	- Design, write and 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 - Understand computer networks including the internet; how they can provide multiple services, such as the World Wide Web - Appreciate how [search] results are selected and ranked
Information Technology		- Make comparisons between loose parts and then begin to sort and categorise objects. - Show skill in making toys work by pressing parts or lifting flaps to achieve effects such as sound, movements or new images.	Use technology purposefully to create, organise, store, manipulate and retrieve digital content	- Use search technologies effectively - 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,

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		• Use ICT hardware to interact with age-appropriate computer software. • Select and use technology for particular purposes.		analysing, evaluating and presenting data and information
Digital Literacy		• Know how to operate simple equipment, e.g. turns on CD player and uses remote control. • Show an interest in technological toys with knobs or pulleys, or real objects such as cameras or mobile phones. • Recognise that a range of technology is used in places such as homes and schools. • Select and use technology for particular purposes.	• 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	• Understand the opportunities [networks] offer for communication and collaboration • Be discerning in evaluating digital content • 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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Curriculum Overview

Computer Science

Pre-school: Children listen and respond to simple instructions, begin to compare, solve puzzles and create/spot patterns.

Early Years: Children show skill in making toys work by pressing parts or lifting flaps to achieve effects such as sound, movements or new images.

Children complete a simple program on a computer. Children use ICT hardware to interact with age-appropriate computer software.

KS1 NC Links: Children understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. Children create and debug simple programs. Children use logical reasoning to predict the behaviour of simple programs.

KS2 NC Links: Children design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. Children use sequence, selection, and repetition in programs; work with variables and various forms of input and output. Children use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.

Pre-school	• Listen and respond to simple instructions • Stack blocks and cups and put things 'in' and 'out' of another object • Repeat actions that have an effect • Copying - actions • Make repetitive sounds • Complete inset puzzles • Notice patterns and arrange things in patterns
EYFS 1	• Follow short instructions (linked to algorithms and Beebots) • Give simple instructions (linked to algorithms and Beebots) • Follow instructions as part of a simple activity (handwashing, brushing teeth) • Identify what to do when something goes wrong (debugging)
EYFS 2	• follow a set of simple verbal directional instructions • follow a set of simple pictorial instructions • use one directional instruction at a time to control a programmable toy (e.g. Beebot) • use the clear button after each command • begin to debug algorithms with adult support.

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YEAR 1	• explain what a given command will do • act out a given word (follow step by step instructions) • combine 'forwards' and 'backwards' commands to make a sequence • combine four direction commands to make sequences • plan a simple program • find more than one solution to a problem • choose a command for a given purpose • show that a series of commands can be joined together • identify the effect of changing a value • explain that each sprite has its own instructions • design the parts of a project • use my algorithm to create a program
YEAR 2	• describe a series of instructions as a sequence • explain what happens when we change the order of instructions • use logical reasoning to predict the outcome of a program • explain that programming projects can have code and artwork • design an algorithm • create and debug a program that I have written • use additional features such as repeat and loop • make predictions about the outcome of a set of instructions • begin to use block coding using colours.
YEAR 3	• explore a new programming environment • identify that commands have an outcome • explain that a program has a start • recognise that a sequence of commands can have an order • change the appearance of my project • create a project from a task description • begin to be able to solve an open-ended problem by breaking it up into smaller parts • begin to use block coding and understand the functions of each block. • keep testing a program and recognise when it needs to be debugged

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YEAR 4	• identify that accuracy in programming is important • create a program in a text-based language • explain what 'repeat' means • modify a count-controlled loop to produce a given outcome • decompose a task into small steps • create a program that uses count-controlled loops to produce a given outcome • keep testing a program and recognise when it needs to be debugged
YEAR 5/6	• identify that accuracy in programming is important • create a program in a text-based language • explain what 'repeat' means • modify a count-controlled loop to produce a given outcome • decompose a task into small steps • create a program that uses count-controlled loops to produce a given outcome • keep testing a program and recognise when it needs to be debugged

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Information Technology

Pre-school: Children explore toys with different mechanisms/pulleys to establish cause and effect, develop manipulation and control and begin to compare using comparative language.

Early Years: Children make comparisons between loose parts and then begin to sort and categorise objects. Children show skill in making toys work by pressing parts or lifting flaps to achieve effects such as sound, movements or new images. Children use ICT hardware to interact with age-appropriate computer software. Children select and use technology for particular purposes.

KS1 NC Links: Children can use technology purposefully to create, organise, store, manipulate and retrieve digital content

KS2 NC Links: Use search technologies effectively. Children 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. Children 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.

Pre-school	• Exploration toys and objects with different mechanisms/pulleys/levers to establish cause and effect • Show attention to sounds and music • Turn taking in conversations • Comparing amounts saying 'lots' or 'more' • Comparing sizes, weights etc. using gesture and language • Develop manipulation and control
EYFS 1	• take photos using an iPad, digital camera etc. • Loose parts play: make comparisons (lengths, height, size) • Loose parts play: continue to sort and categorise objects and say how they have been sorted. • use tools such as pen size and colour (2Simple on Clever Touch boards) • interact with toys to create sound and motion
EYFS 2	• use tools such as pen size and colour (2Simple on Clever Touch boards and Pic collage on iPads) • add text to a template (iPad) • take photos using an iPad, digital camera etc. • Word Processing • interact with toys to create sound and motion • use a sound recorder to record own voice (e.g. iPad, voice recorder, talk tin) • use an iPad to record a short video with support

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YEAR 1	• describe what different freehand tools do • use the shape tool and the line tools • make careful choices when painting a digital picture • explain why I chose the tools I used • use a computer on my own to paint a picture • compare painting a picture on a computer and on paper • save, retrieve and organise work with support • identify that objects can be counted • describe objects in different ways • count objects with the same properties • compare groups of objects • answer questions about groups of objects • use a computer to write • add and remove text on a computer • identify that the look of text can be changed on a computer • make careful choices when changing text • explain why I used the tools that I chose • compare typing on a computer to writing on paper
YEAR 2	• use a digital device to take a photograph • make choices when taking a photograph • describe what makes a good photograph • decide how photographs can be improved • use tools to change an image • recognise that photos can be changed • recognise that we can count and compare objects using tally charts • recognise that objects can be represented as pictures • create a pictogram • select objects by attribute and make comparisons • recognise that people can be described by attributes • explain that we can present information using a computer

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	• identify that there are patterns in music • experiment with sound using a computer • use a computer to create a musical pattern • create music for a purpose • review and refine our computer work
YEAR 3	• explain that animation is a sequence of drawings or photographs • relate animated movement with a sequence of images • plan an animation • identify the need to work consistently and carefully • review and improve an animation • evaluate the impact of adding other media to an animation • create questions with yes/no answers • identify the attributes needed to collect data about an object • create a branching database • explain why it is helpful for a database to be well structured • plan the structure of a branching database • explain why it is helpful for a database to be well structured • independently create an identification tool • recognise how text and images convey information • recognise that text and layout can be edited • choose appropriate page settings • add content to a desktop publishing publication • consider how different layouts can suit different purposes • consider the benefits of desktop publishing
YEAR 4	• identify that sound can be recorded (input and output) • explain that audio recordings can be edited • recognise the different parts of creating a podcast project • apply audio editing skills independently • combine audio to enhance my podcast project • evaluate the effective use of audio

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	• explain that data gathered over time can be used to answer questions • use a digital device to collect data automatically • explain that a data logger collects 'data points' from sensors over time • recognise how a computer can help us analyse data • identify the data needed to answer questions • use data from sensors to answer questions • explain that the composition of digital images can be changed • explain that colours can be changed in digital images • explain how cloning can be used in photo editing • explain that images can be combined • combine images for a purpose • evaluate how changes can improve an image
YEAR 5/6	• identify that sound can be recorded (input and output) • explain that audio recordings can be edited • recognise the different parts of creating a podcast project • apply audio editing skills independently • combine audio to enhance my podcast project • evaluate the effective use of audio • explain that data gathered over time can be used to answer questions • use a digital device to collect data automatically • explain that a data logger collects 'data points' from sensors over time • recognise how a computer can help us analyse data • identify the data needed to answer questions • use data from sensors to answer questions • explain that the composition of digital images can be changed • explain that colours can be changed in digital images • explain how cloning can be used in photo editing • explain that images can be combined • combine images for a purpose • evaluate how changes can improve an image

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Digital Literacy

Pre-school: Children begin to understand how to keep safe and listen to music through different technology.

Early Years: Children know how to operate simple equipment, e.g. turns on CD player and uses remote control. Children show an interest in technological toys with knobs or pulleys, or real objects such as cameras or mobile phones. Children recognise that a range of technology is used in places such as homes and schools. Children select and use technology for particular purposes.

KS1 NC Links: Children recognise common uses of information technology beyond school. Children 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 NC Links: Children understand the opportunities [networks] offer for communication and collaboration. Children be discerning in evaluating digital content. Children use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

Pre-school	• Keeping safe in the world • Seeing different technology being used • Listening to music through different technology
EYFS 1	• name different types of technology used at home • name different types of technology used at school • choose the appropriate technology to complete an activity e.g. using an iPad to take a photo, turning on a CD player to listen to music etc. • know who to ask for help
EYFS 2	• name different types of technology used at home • name different types of technology used at school • choose the appropriate technology to complete an activity e.g. using an iPad to take a photo, turning on a CD player to listen to music etc. • know who to ask for help • logging onto computers • accessing the school website

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YEAR 1	• identify technology • identify a computer and its main parts • use a mouse in different ways • use a keyboard to type on a computer • use the keyboard to edit text • talk about the ways in which different technology is used at home and at school • explore the school website to find links to desired websites • begin to use safe search filters such as Swiggle • create rules for using technology responsibly
YEAR 2	• recognise the uses and features of information technology • identify the uses of information technology in the school • identify information technology beyond school • explain how information technology helps us • explain how to use information technology safely • recognise that choices are made when using information technology • talk about the purpose of different technology and why we use it • use links to websites to find information • recognise age-appropriate websites • use safe search filters such as Swiggle
YEAR 3	• explain how digital devices function • identify input and output devices • recognise how digital devices can change the way that we work • explain how a computer network can be used to share information • explore how digital devices can be connected • recognise the physical components of a network • use safe search filters to find and use appropriate website and content

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YEAR 4	• describe how networks physically connect to other networks • recognise how networked devices make up the internet • outline how websites can be shared via the World Wide Web (WWW) • describe how content can be added and accessed on the World Wide Web (WWW) • recognise how the content of the WWW is created by people • evaluate the consequences of unreliable content
YEAR 5/6	• describe how networks physically connect to other networks • recognise how networked devices make up the internet • outline how websites can be shared via the World Wide Web (WWW) • describe how content can be added and accessed on the World Wide Web (WWW) • recognise how the content of the WWW is created by people • evaluate the consequences of unreliable content •

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Online Safety (Part of digital literacy)

Early Years: Children know that information can be retrieved from computers. Children use ICT hardware to interact with age-appropriate computer software. Children select and use technology for particular purposes.

KS1 NC Links: Children 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 NC Links: Children use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

EYFS 1 and 2	- I can identify rules that help keep us safe and healthy in and beyond the home when using technology - I can attempt to say why they are allowed or not allowed to do these things. - I can state what to do if they are worried or unsure about something online. - I can describe specific examples/ ways people can be unkind online - I know what being 'unkind online' means and looks like - I understand that you can be unkind and kind to someone online - I can identify and name examples of their own personal information. - I can name people they trust and why. - I can describe who would be trustworthy to share this information with; I can explain why they are trusted. - I know that I can say 'no' / 'please stop' / 'I'll tell' / 'I'll ask' to somebody who asks me to do something that makes me feel sad, embarrassed or upset - I can give different examples of how to say 'no' / 'please stop' / 'I'll tell' / 'I'll ask' - I can explain how this could be better to do in real life or online - I can name some ways that members of my family talk to each other and other people using the internet - I can name an app, a piece of software or a technology that I use or could use to talk to people I know - I know that work I create belongs to me. - I can understand the benefits of naming my electronic work.
YEAR 1	- I can explain how passwords are used to protect information, accounts and devices. - I can recognise more detailed examples of information that is personal to someone (e.g where someone lives and goes to school, family names). - I can explain why it is important to always ask a trusted adult before sharing any personal information online, belonging to myself or others. - I can explain rules to keep myself safe when using technology both in and beyond the home - I can access the school website. - I can describe how to behave online in ways that do not upset others and can give examples.

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	- I can explain how passwords are used to protect information, accounts and devices. - I can recognise more detailed examples of information that is personal to someone (e.g where someone lives and goes to school , family names). - I can recognise that there may be people online who could make someone feel sad, embarrassed or upset. - If something happens that makes me feel sad, worried, uncomfortable or frightened I can give examples of when and how to speak to an adult I can trust and how they can help. - I can give examples of when I should ask permission to do something online and explain why this is important - I can use the internet with adult support to communicate with people I know (e.g. video call apps or services). - I can explain why it is important to be considerate and kind to people online and to respect their choices. - I can explain why work I create using technology belongs to me - I can say why it belongs to me (e.g. 'I designed it' or 'I filmed it'). - I can save my work under a suitable title or name so that others know it belongs to me (e.g. filename, name on content). - I understand that work created by others does not belong to me even if I save a copy.
YEAR 2	- I can explain simple guidance for using technology in different environments and settings e.g. accessing online technologies in public places and the home environment. - I can say how those rules / guides can help anyone accessing online technologies - I can explain what bullying is, how people may bully others and how bullying can make someone feel. - I can explain why anyone who experiences bullying is not to blame. - I can talk about how anyone experiencing bullying can get help. - I can explain how passwords can be used to protect information, accounts and devices. - I can explain and give examples of what is meant by 'private' and 'keeping things private' - I can describe and explain some rules for keeping personal information private (e.g. creating and protecting passwords). - I can explain how some people may have devices in their homes connected to the internet and give examples (e.g. lights, fridges, toys, televisions). - I can explain how other people may look and act differently online and offline. - I can give examples of issues online that might make someone feel sad, worried, uncomfortable or frightened; I can give examples of how they might get help. - I can explain how information put online about someone can last for a long time. - I can describe how anyone's online information could be seen by others. - I know who to talk to if something has been put online without consent or if it is incorrect - I can give examples of how someone might use technology to communicate with others they don't also know offline and explain why this might be risky. (e.g. email, online gaming, a pen-pal in another school / country). - I can explain who I should ask before sharing things about myself or others online. - I can describe different ways to ask for, give, or deny my permission online and can identify who can help me if I am not sure. - I can explain why I have a right to say 'no' or 'I will have to ask someone'. I can explain who can help me if I feel under pressure to agree to something I am unsure about or don't want to do. - I can identify who can help me if something happens online without my consent. - I can explain why I should always ask a trusted adult before clicking 'yes', 'agree' or 'accept' online - I can recognise that content on the internet may belong to other people.

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	I can describe why other people's work belongs to them
YEAR 3	I can explain why spending too much time using technology can sometimes have a negative impact on anyone; I can give some examples of both positive and negative activities where it is easy to spend a lot of time engaged I can explain why some online activities have age restrictions, why it is important to follow them and know who I can talk to if others pressure me to watch or do something online that makes me feel uncomfortable (e.g. age restricted gaming or web sites). I can describe appropriate ways to behave towards other people online and why this is important. I can give examples of how bullying behaviour could appear online and how someone can get support. I can describe simple strategies for creating and keeping passwords private. I can give reasons why someone should only share information with people they choose to and can trust. I can explain that if they are not sure or feel pressured then they should tell a trusted adult. I can describe how connected devices can collect and share anyone's information with others. I can explain how to search for information about others online. I can give examples of what anyone may or may not be willing to share about themselves online. I can explain the need to be careful before sharing anything personal. I can explain who someone can ask if they are unsure about putting something online. I can explain what is meant by the term 'identity'. I can explain how people can represent themselves in different ways online I can explain ways in which someone might change their identity depending on what they are doing online (e.g. gaming; using an avatar; social media) and why. I can describe ways people who have similar likes and interests can get together online. I can explain what it means to 'know someone' online and why this might be different from knowing someone offline. I can explain what is meant by 'trusting someone online', why this is different from 'liking someone online', and why it is important to be careful about who to trust online including what information and content they are trusted with. I can explain why someone may change their mind about trusting anyone with something if they feel nervous, uncomfortable or worried. I can explain how someone's feelings can be hurt by what is said or written online. I can explain the importance of giving and gaining permission before sharing things online; how the principles of sharing online is the same as sharing offline e.g. sharing images and videos. I can explain why copying someone else's work from the internet without permission isn't fair and can explain what problems this might cause.
YEAR 4	I can explain how using technology can be a distraction from other things, in both a positive and negative way. I can identify times or situations when someone may need to limit the amount of time they use technology e.g. I can suggest strategies to help with limiting this time. I can recognise when someone is upset, hurt or angry online. I can describe ways people can be bullied through a range of media (e.g. image, video, text, chat). I can explain why people need to think carefully about how content they post might affect others, their feelings and how it may affect how others feel about them (their reputation). I can describe strategies for keeping personal information private, depending on context. I can explain that internet use is never fully private and is monitored, e.g. adult supervision. I can describe how some online services may seek consent to store information about me; I know how to respond appropriately and who I can ask if I am not sure.

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	I know what the digital age of consent is and the impact this has on online services asking for consent. I can describe how to find out information about others by searching online. I can explain ways that some of the information about anyone online could have been created, copied or shared by others. I can explain how my online identity can be different to my offline identity. I can describe positive ways for someone to interact with others online and understand how this will positively impact on how others perceive them. I can explain that others online can pretend to be someone else, including my friends, and can suggest reasons why they might do this. I can describe strategies for safe and fun experiences in a range of online social environments (e.g. livestreaming, gaming platforms). I can give examples of how to be respectful to others online and describe how to recognise healthy and unhealthy online behaviours. I can explain how content shared online may feel unimportant to one person but may be important to other people's When searching on the internet for content to use, I can explain why I need to consider who owns it and whether I have the right to reuse it. I can give some simple examples of content which I must not use without permission from the owner, e.g. videos, music, images.
YEAR 5/6	I can explain how using technology can be a distraction from other things, in both a positive and negative way. I can identify times or situations when someone may need to limit the amount of time they use technology e.g. I can suggest strategies to help with limiting this time. I can recognise when someone is upset, hurt or angry online. I can describe ways people can be bullied through a range of media (e.g. image, video, text, chat). I can explain why people need to think carefully about how content they post might affect others, their feelings and how it may affect how others feel about them (their reputation). I can describe strategies for keeping personal information private, depending on context. I can explain that internet use is never fully private and is monitored, e.g. adult supervision. I can describe how some online services may seek consent to store information about me; I know how to respond appropriately and who I can ask if I am not sure. I know what the digital age of consent is and the impact this has on online services asking for consent. I can describe how to find out information about others by searching online. I can explain ways that some of the information about anyone online could have been created, copied or shared by others. I can explain how my online identity can be different to my offline identity. I can describe positive ways for someone to interact with others online and understand how this will positively impact on how others perceive them. I can explain that others online can pretend to be someone else, including my friends, and can suggest reasons why they might do this. I can describe strategies for safe and fun experiences in a range of online social environments (e.g. livestreaming, gaming platforms). I can give examples of how to be respectful to others online and describe how to recognise healthy and unhealthy online behaviours. I can explain how content shared online may feel unimportant to one person but may be important to other people's When searching on the internet for content to use, I can explain why I need to consider who owns it and whether I have the right to reuse it. I can give some simple examples of content which I must not use without permission from the owner, e.g. videos, music, images.

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