



Killamarsh Infant and Nursery School

Key Learning in Computing

Curriculum Intent:

Computing is an essential part of the national curriculum. Computing is an integral part of modern day life and therefore provides a wealth of learning opportunities, explicitly within computing and also across other curriculum subjects. Through the study of computing, children are able to develop a wide range of fundamental skills, knowledge and understanding that they will need for the rest of their lives. Computers have become a part of everyday life. For most of us, technology is essential to our daily lives, at home and at work. 'Computational Thinking' is a skill children must be taught in order to provide them with essential knowledge and skills that will enable them to participate effectively in the digital world.

Curriculum Implementation:

The new national curriculum defines three clear aspects of computing curriculum: Computer Science (CS), Information Technology (IT) and Digital Literacy (DL). Children will be given the opportunity to develop their knowledge and understanding in each area from the Foundation Stage to Year 2.

In Key stage 1 Pupils are taught to:

- ♣ 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
- ♣ use technology purposefully to create, organise, store, manipulate and retrieve digital content
- ♣ 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.

Computing is taught within weekly lessons as we believe regular practice is key to developing digital literacy.

Currently most of the computing curriculum is taught through purple mash.

We intend to create a bespoke scheme of work to cover the computing curriculum across key stage 1. (Linked to current topics where applicable)

The school has a computing suite with 15 desktop computers and children also have access to computers in the classrooms, ensuring that children can use computers for a range of purposes and that it is used across the wider curriculum, as well as in discrete computing lessons. Every classroom has a desktop computer linked to an interactive whiteboard. In early years the children have access to a smart table and also 3 Samsung tablets.

Curriculum Impact:

After the implementation of this robust computing curriculum, children at Killamarsh Infant and Nursery School will be digitally literate and able to join the rest of the world on its digital platform. They will be equipped, not only with the skills and knowledge to use technology effectively and for their own benefit, but more importantly – safely.

We encourage our children to value and enjoy the curriculum we deliver. We want learners to discuss, reflect and appreciate the impact that computing has on their learning, development and well-being. Finding the right balance with technology is key to an effective education and a healthy lifestyle. We feel the way we implement computing helps children realise the need for the right balance and one they can continue to build on in their next stage of education and beyond. We encourage regular discussions between staff and pupils to best embed and understand this.

Key Learning in Early Years

Three and Four-Year-Olds	Personal, Social and Emotional Development		<ul style="list-style-type: none"> Remember rules without needing an adult to remind them.
	Physical Development		<ul style="list-style-type: none"> Match their developing physical skills to tasks and activities in the setting.
	Understanding the World		<ul style="list-style-type: none"> Explore how things work
Reception	Personal, Social and Emotional Development		<ul style="list-style-type: none"> Show resilience and perseverance in the face of a challenge. Know and talk about the different factors that support their overall health and wellbeing: -sensible amounts of 'screen time'.
	Physical Development		<ul style="list-style-type: none"> Develop their small motor skills so that they can use a range of tools competently, safely and confidently.
	Expressive Arts and Design		<ul style="list-style-type: none"> Explore, use and refine a variety of artistic effects to express their ideas and feelings.
ELG	Personal, Social and Emotional Development	Managing Self	<ul style="list-style-type: none"> Be confident to try new activities and show independence, resilience and perseverance in the face of challenge. Explain the reasons for rules, know right from wrong and try to behave accordingly.
	Expressive Arts and Design	Creating with Materials	<ul style="list-style-type: none"> Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.

Skills

Computer science

I can follow simple oral algorithms

I can spot simple patterns

I can sequence simple familiar tasks

I can use a mouse, touch screen or appropriate access device to target and select options on screen

I can input a simple sequence of commands to control a digital device with support (Bee Bot)

Information Technology

I can play on a touch screen game and use computers/ keyboards/mouse in role play

- I can type letters with increasing confidence using a keyboard and tablet.
- I can dictate short, clear sentences into a digital device.
- I can identify a chart.
- I can sort physical objects, take a picture and discuss what I have done.
- I can present simple data on a digital device
- I can record my voice over a picture.
- I can create a simple digital collage.
- I can move and resize images with my fingers or mouse
- I know the difference between a photography and video.
- I can record a short film using the camera
- I can record and play a film
- I can watch films back I can take a photograph
- I can take a photograph and use it in an app
- I can use a painting app and explore the paint and brush tools

Key Learning in Years 1 and 2

Information Technology	
Programme of Study	
<ul style="list-style-type: none"> ▪ Use technology purposefully to create, organise, store, manipulate and retrieve digital content. 	
Skills	Knowledge and Understanding
Create, Manage and Manipulate Digital Content	Create, Manage and Manipulate Digital Content
Text and images	Text and images
<p>On a range of devices:</p> <ul style="list-style-type: none"> Develop correct use of the keyboard (e.g. spacebar, backspace, delete, shift (not caps lock) and enter keys). Add captions to photos and graphics. Select text appropriately e.g. highlighting or clicking text to select. 	<ul style="list-style-type: none"> ▪ Know that text can be different colours, sizes and styles and that these can easily be changed. ▪ Know that technology can be used to communicate ideas in different ways, e.g. text, images, tables and sound. ▪ Understand there are a variety of tools in graphics packages, each fulfilling a different purpose. ▪ Know that there are various ways of capturing still and moving images.

<p>Make simple changes to text e.g. colour, style and size. Select text from word lists (if necessary). Select appropriate images to add to work. Word process short texts directly onto the computer (i.e. do not just copy up handwritten work). Navigate round text in a variety of ways e.g. mouse, arrow keys, touch, when editing work.</p> <ul style="list-style-type: none"> ▪ Save and store work in an appropriate area, and be able to print, retrieve and amend it. ▪ Use a range of digital devices to capture and save both still and moving images. These could include digital cameras, video cameras, tablets, ▪ Refine the use of shape, line and colour to communicate a specific idea or artistic style/effect through various tools including brushes, pens, lines, flood fill, spray and stamps. ▪ Talk about their use of graphics package and their choice of tools. ▪ Begin to make changes to images e.g. cropping using basic tools in image manipulation software. ▪ Upload images or video from cameras and other digital devices to a computer, or into a document, with support if needed. ▪ Create a sequence of images to form a short animation. ▪ Begin to add different forms of media together e.g. text and images in blogs or word processing documents. ▪ Organise and name files appropriately and accurately. 	<ul style="list-style-type: none"> ▪ Know the importance of giving an appropriate name to files. ▪ Understand that files can be retrieved from their location and edited. ▪ Know what the term multimedia means. ▪ Understand the differences between a graphics package and paper based art activities. ▪ Know that there are various ways of capturing still and moving images. ▪ Understand the need to frame an image or scene and keep the camera still. ▪ Understand that animation is a sequence of still images. ▪ Know how to take images appropriately and responsibly. ▪ Understand how the mood of a piece can easily be changed through use of text, graphics and sound. ▪ Begin to understand that images, sounds and text can be subject to copyright. ▪ Start to understand that content needs to be changed according to the audience. ▪ Understand the importance that files need to be Organised and named files appropriately and accurately.
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<p>Sound</p> <ul style="list-style-type: none"> ▪ Explore a range of electronic music and sound devices and software. ▪ Be able to listen to and to select a sound from a bank of pre-recorded sounds. ▪ Use sound recorders, both at and away from the computer, to record and playback sounds e.g. voices, instruments, environmental sounds. ▪ Use software to explore and create sound and musical phrases for a purpose. ▪ Use basic editing tools to change recorded sounds (speed up, slow down, reverse, echo) to alter the mood or atmosphere ▪ Use recorded sound files in other software applications. ▪ Be able to save sound files. ▪ Be able to share recordings with a known audience. 	<p>Sound</p> <ul style="list-style-type: none"> ▪ Understand that most devices have stop, record and playback functions. ▪ Be aware that sound can be recorded and stored on the computer as a sound file.
<p>Data handling</p> <ul style="list-style-type: none"> ▪ Develop classification skills by carrying out sorting activities ▪ Use simple graphing software to produce pictograms and other basic tables, charts or graphs. 	<p>Data handling</p> <ul style="list-style-type: none"> ▪ Understand that IT can be used to sort items and information. ▪ Understand that IT can be used to create and display charts graphs.

<ul style="list-style-type: none"> ▪ Use graphing software to enter data and change a graph type, e.g. pictogram to bar chart. ▪ Interpret the graphs, discuss the information contained and answer simple questions. ▪ Sort and classify a group of items by asking simple yes / no questions. This may take place away from the computer, e.g. a 'Guess Who' game. ▪ Use a branching database program to sort and identify items. ▪ Use basic search tools in a prepared database to answer simple questions e.g. how many children have brown hair? 	<ul style="list-style-type: none"> ▪ Develop an understanding of what data logging can be used for (Science). ▪ Understand that IT can be used to add to and change charts and graphs quite easily. ▪ Begin to understand that unless data has been entered accurately it cannot be used to provide correct answers to questions.
<p>Digital research – searching</p> <ul style="list-style-type: none"> ▪ Locate specific, teacher defined, age appropriate websites through a favourites menu and /or by typing a website address (URL) into the address bar in a web browser. ▪ Use technology to source, generate and amend ideas e.g. searching a resource such as Espresso for images by a specific artist. ▪ Talk about their use of technology and other ways of finding information, e.g. books, asking other people. ▪ Use and explore appropriate buttons, arrows, menus and hyperlinks to navigate teacher selected web sites, and other sources of stored information. ▪ Use key words to search a specific resource for information, e.g. Espresso and other websites, under the guidance and supervision of an adult. ▪ Be able to retrieve files from a computer using a search of the computer. 	<p>Digital research – searching</p> <ul style="list-style-type: none"> ▪ Begin to understand that some websites are more useful than others when searching for topics. ▪ Understand that technology can give rapid access to a wide variety of information and resources, including internet, TV, DVDs ▪ Understand that there are different ways of finding information, e.g. books, asking other people ▪ Understand that different forms of information, e.g. text, images, sound, multimedia exist and that some are more useful for specific purposes than others. ▪ Understand that files can be retrieved and found on a computer using a search of the computer. ▪ Understand and discuss how information can be obtained and used to answer specific questions. ▪ Understand a website has a unique address and the need for precision when typing it. ▪ Begin to understand that not everything on the internet is true. ▪ Be aware that they can be accidentally diverted from websites through a link to a new website, advertising or pop-ups.

<h2>Digital Literacy</h2>	
<p>Programme of Study</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 or contact on the internet or other online technologies. 	
<p>Skills</p>	<p>Knowledge and Understanding</p>
<p>Online safety</p> <ul style="list-style-type: none"> ▪ Use technology safely. ▪ Keep personal information safe. ▪ Use technology respectfully. ▪ Recognise situations involving content and contact that are not safe, (e.g. In emails, text messages, videos) and know where to go for help. ▪ Minimise screen, turn off the monitor, or use back buttons to return to the home page if anything inappropriate appears on the screen. 	<p>Online safety</p> <ul style="list-style-type: none"> ▪ Know what it means to use technology safely. ▪ Understand what is meant by personal information. ▪ Understand how to keep personal information safe online. ▪ Know the rules for keeping safe online. ▪ Understand that personal information, e.g. email address, usernames, passwords, home address or telephone number should not be shared, either online or offline, without a trusted adult's permission. ▪ Know that they should not ask to meet anybody from the online world in the offline world. ▪ Know and abide by the school's rules for keeping safe online (age appropriate).

	<ul style="list-style-type: none"> ▪ Understand that technology should be used respectfully. ▪ Know where to go for help and support when they have concerns about content they have seen on the internet or other technologies. ▪ Know where to go for help and support when they have concerns about contact on the internet or other technologies.
	<p>Uses of technology</p> <ul style="list-style-type: none"> ▪ Recognise common uses of information technology beyond school.
<p>Electronic communication</p> <ul style="list-style-type: none"> ▪ Contribute ideas to class and group emails. ▪ Send an email, using a subject heading, to a known member of the school community e.g. another class teacher, bursar ▪ Open and reply to an email from a known person. ▪ Contribute to a blog, journal or forum on the school's VLE. ▪ Develop an awareness of appropriate language to use in email and other forms of digital communication such as blogs. ▪ Begin to use webcams and /or video conferencing as a class, if appropriate and available, with external providers, another class or school. ▪ Talk openly about their use of online communication in school and at home. 	<p>Electronic communication</p> <ul style="list-style-type: none"> ▪ Understand that messages can quickly be sent electronically, via a range of devices, over distances and that people can reply to them. ▪ Understand that an email has to be sent to a unique email address and the need for accuracy in typing the address. ▪ Understand that electronic messages can be in the form of pictures, sound and/or text. ▪ Understand that some emails may be malicious or inappropriate and begin to recognise when an attachment may be unsafe to open. ▪ Understand the different ways that messages can be sent e.g. email, text messages, letter, phone, forums and begin to consider the advantages, or appropriateness, each one.

<p>Computer Science</p>	
<p>Programme of Study</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>Skills</p>	<p>Knowledge and Understanding</p>
<p>Programming</p> <ul style="list-style-type: none"> ▪ Give and follow commands (one at a time) to navigate other children and programmable toys around a course or a familiar journey, including straight and turning movements. ▪ Plan, generate and follow a sequence of instructions (actual and on-screen) to make something happen; or complete a given task or problem to create a simple program. ▪ Explore and create sequences of commands/instructions in a variety of programs/devices. ▪ Make predictions and describe the effects when creating programs and controlling devices. ▪ Identify errors in instructions. ▪ Use logical reasoning to predict what will happen in simple programs. 	<p>Programming</p> <ul style="list-style-type: none"> ▪ Understand that algorithms are a series of steps or instructions to achieve a specific goal. ▪ Understand that devices respond to commands. ▪ Understand the meaning of the term program. ▪ Talk about devices in the home that are controlled by commands. ▪ Understand that prediction, trial and error are important considerations when creating programs or controlling movement. ▪ Understand that there are different ways to create or produce a sequence of commands, including verbal, recorded, graphical, pressing buttons and on screen methods.

	<ul style="list-style-type: none"> ▪ Understand what debugging is and begin to understand that you can develop strategies to help find bugs. ▪ Understand what logical reasoning is and how it can be used to predict what happens in simple programs.
Simulations and modeling	Simulations and modeling
<ul style="list-style-type: none"> ▪ Explore simulations of real and virtual environments e.g. BBC science clips, virtual plants and pets. ▪ Make informed choices when exploring what happens in a simulation. ▪ Discuss use of simulations and compare with reality, e.g. a simulation of a science experiment. ▪ Talk about the rules found in simulations. 	<ul style="list-style-type: none"> ▪ Understand that computer simulations can represent real and virtual environments. ▪ Understand that computer simulations allow the user to explore options and make choices, recognising that different decisions produce different outcomes.

Key Vocabulary

	Year 1	Year 2
Term 1 - Computing systems and networks	Technology, computer, mouse, keyboard, screen, click, shift, space, capital letter, full stop, safely.	Information technology, computer, mouse/trackpad, double click, drag, barcode, scanner, scan, responsibly, space bar.
Privacy and Security	Password, good, bad, online, protect, personal information, share, name, birthday,	Password, effective, strong, poor, share, public platform, content, protect, personal information, connected device,
Term 2 - Creating media - digital writing	Word, keyboard, keys, letters, Microsoft word, number, space, backspace, text, cursor, capital letters, bold, select, undo.	Word processor, google docs, Microsoft word, text, cursor, toolbar, bold, italic, underline, move cursor, select font.

Self-image and identity/online bullying	Online behaviour, kind, unkind, sad, embarrassed, upset, ask, adult, trusted, self-image, identity,	Bullying, behaviour, unsafe, uncomfortable, feelings, online, accidental, on purpose, help, responsible adult, change, different, appearance, sad, worried,
Term 3 - Coding	Action, algorithm, background, code, command, debug, debugging, event, execute, input, instructions, object, properties, output, run.	Action, algorithm, background, button, collision, detection, debug, debugging, design mode, event, predict, properties, run, scale, scene, sound, sequence, text, timer.
Managing online info	Search engine, internet, search, real, not real, like, dislike, true, trusted adult,	Search engine, keywords, navigate, home, forward, back buttons; links, tabs and sections, voice activated, true, real, made up,
Term 4 - Animation/Painting	Paint program, tool, paintbrush, erase, fill, undo, primary colours, shape tools, line, undo tool, brush style, brush size, painting.	Animation, tool, brush, fill, undo, copy, colour, background, line, painting, move, play.
Health, wellbeing and lifestyle	Rules, technology, school, home, safe, happy, healthy, choices,	Rules, technology, patience, health risks, well-being awareness,
Term 5 - Power point	PowerPoint, presentation, slide, header, title, sound.	Presentation, animated, non-fiction, narrative, audience, sound, music.

Online relationships/online reputation	Ask, permission, communicate, know, kind, considerate, online, offline, likes, dislikes, copied info, personal information,	Message, risks, online, offline, communicate, check, consent, permission, support, share, trusted adult, ask, give, deny, feelings, positive, no, concern, next steps, request, information online, protect, prevent,
Term 6 - Fake bots/Beebots	Beebots, command, forward, backward, turn, clear, go, instructions, directions, left, right, plan, algorithm, program, route.	Instructions, sequence, clear, unambiguous, algorithm, program, order, commands, prediction, design, route, mat, debugging.
Copyright and ownership	Digital work, belong, belonging, naming files,	Digital content, belongs, online content, credited,