

## All Saints CE Primary School and Nursery

### Computing Curriculum-Progression in Knowledge and Skills

Year	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Nursery	What is a keyboard and how does it work?	What is a mouse and how does it work?	What is an instruction?	What is a camera and how does it work?	How do you make things move?	How can we compare?
<b>Ongoing:</b> Loose parts play  Able to follow safe internet rules at school Texts: Digi duck and Smartie the penguin  Recognise some technology that is used in familiar places e.g. home, school, shops  Use technology appropriately through role play	Exploring how things work- Keyboards and mouse control.  <b>Online Safety-</b> I understand my own body is mine and that I can say no in real life or online  I know that we have rules to keep us safe both in and beyond the home	Using a mouse to click and drag.  <b>Online Safety-</b> I can talk about some ways that the internet can be used to communicate	Following instructions Giving simple instructions Dressing up instructions Debugging  <b>Online Safety-</b> I know I can put information on the internet	Exploring hardware Real world tinker tray Pictures of play Picture walk Class photo album  <b>Online Safety-</b> I know some people can be unkind online	Understanding arrows  Introducing Bee-bot  Programming Bee-bot: Explore what happens when individual buttons are pressed on robots/floor robots  <b>Online Safety-</b> I know I can use the internet to find things out	Sorting ourselves Yes or no questions? Exploring pictograms  <b>Online Safety-</b> I can talk about some simple examples of my personal information.  I know the people I can trust and share this with.  I know that work I create is mine and I can name my work.
<b>Vocabulary</b>	Computer, monitor, keyboard, type, mouse, move, click, letters, numbers, safe, online, compuer, phone,	Mouse, left click, right click, click, move, drag, arrow, paint, drop, communicate, internet, safe	Instructions, step over, walk around, turn, left right, side, straight on, stop, stand, under, walk, hop, run, describe, two-part instruction, safe, information, name, address	Mouse, buttons, keyboard, keys, monitor, speaker, click, push, pull, open, shut, technology, power, electricity, battery, push, twist, on, off, camera, IPad, tablet, lens, point, shoot, picture, record, photograph, photographer, safe, kind, unkind	Forward, backward, right, left, arrow, direction, turn, straight on, directions, program, instructions, back, circle, arrow, sequence, information, research, find	Sort, categorise, group, describe pattern, colour, size, height, more, less, count, in total, altogether, pictogram, graph, column, row, square, data, collect, record, most popular, least popular, safe secret, unsafe secret, share, my own

Reception	How do you keep yourself safe online?	Can you use a computer?	Can you follow instructions to make a programme?	Can you operate electrical equipment/hardware?	Can you make a BeeBot move?	What is data?
<p><b>Online Safety taught throughout the year.</b></p> <p>Able to follow the SMART rules at school.</p> <p>Texts: Digi Duck and Smartie the Penguin</p> <p>Use the OSBOX resources.</p> <p>Logging onto the computers and accessing Purple Mash/Kapow.</p>	<p>Online Safety.</p> <p>To learn about the internet and it's uses.</p> <p>To learn about how to be safe on the internet.</p> <p>To learn about what to do when they feel unsafe online.</p>	<p>Name and use a keyboard and mouse with developing control.</p> <p>To learn how to log onto a Computer.</p> <p>To log onto the computer independently.</p>	<p>Uses ICT hardware to interact with age-appropriate computer software.</p> <p>Can use a range of Technology for different purposes.</p>	<p>To explore and explain how things work/knows how to operate simple equipment.</p> <p>Shows an interest in technological toys with knobs or pulleys, or real objects such as cameras or mobile phones.</p> <p>Shows skill in making toys work by pressing parts or lifting flaps to achieve effects such as sound, movements or new images.</p> <p>To be able to take a photograph.</p>	<p>Completes a simple program on a computer.</p> <p>To program BeeBots to follow a set route.</p>	<p>Knows that information can be retrieved from computers and other sources.</p>
<b>Core Vocabulary</b>	Safe, unsafe, online, communicate, internet, device, internet, SMART rules, strangers, pop ups, blocking, deleting, reporting, trusted adults, information, name, address, school.	Computer, monitor, keyboard, type, mouse, move, click, letters, numbers, phone, left click, right click, click, move, drag, arrow, drop, off, on, logging in.	Instructions, step over, walk around, turn, left right, side, straight on, stop, stand, under, walk, hop, run, describe, two-part instruction,	Mouse, buttons, keyboard, keys, monitor, speaker, click, push, pull, open, shut, technology, power, electricity, battery, push, twist, on, off, camera, iPad, tablet, lens, point, shoot, picture, record,	Forward, backward, right, left, arrow, direction, turn, straight on, directions, program, instructions, back, circle, arrow, sequence, information, research, find.	Sort, categorise, group, describe pattern, colour, size, height, more, less, count, in total, altogether, pictogram, graph, column, row, square, data, collect, record, most popular, least popular.

				photograph, photographers.		
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By the end of EYFS children as **Computer Learners** will:

- Learn how to operate a camera to take photographs of meaningful creations or moments.
- Learn how to explore and tinker with hardware to develop familiarity and introduce relevant vocabulary.
- Recognise and identify familiar letters and numbers on a keyboard.
- Develop basic mouse skills such as moving and clicking.
- Use a simple online paint tool to create digital art.
- Represent data through sorting and categorising objects in unplugged scenarios.
- Explore branch databases through physical games.
- Use logical reasoning to understand simple instructions and predict the outcome.
- Follow instructions as part of practical activities and games.
- Learn to give simple instructions.
- Learn to debug instructions, with the help of an adult, when things go wrong.
- Recognise that a range of technology is used for different purposes.
- Learn to log in and log out.
- Talk about good & bad choices in real life e.g. taking turns, saying kind things, helping others, telling an adult if something upsets you.
- Play appropriate games on the Internet.
- Talk about good and bad choices when using websites – being kind, telling a grown up if something upsets us & keeping ourselves safe by keeping information private.
- Explore operating equipment.
- Understand simple directions.
- Help adults operate equipment around the school, independently operating simple equipment.
- Use simple software to make things happen Press buttons on a floor robot and talk about the movements.
- Explore options and make choices with toys, software and websites.
- Identify technology they use at home.
- Use a simple pictogram or set of photos to count and organise information.

Year	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	How do I navigate around a computer?	Can you fix it?	How can I create something on the computer?	How can we programme a device?	What is a digital image?	How can technology be used to represent data?
Online safety Use technology safely and respectfully, keeping personal information private; identify where to go	Recognise common uses of information technology beyond school	Programming 1: Algorithms unplugged. Begin to understand what algorithms are; how they are	Create simple programs.	Create simple programs.	Use technology purposefully to create, organise and manipulate digital content.	Use technology purposefully to create, organise and manipulate digital content.

for help and support when they have concerns about content or contact on the internet or other online technologies.		implemented as programs on digital devices and input instructions.				
<b>Core Vocabulary</b>	Log in, log out, username, password, computer, mouse, cursor, keyboard, click, drag, Ctrl, tools, menu, right click.	Algorithm, instructions, tasks, order, input, output, device, problem, debug, code, correct.	Digital image, create, design, annotate, document, program, software, spreadsheet.	Clear, demonstration, instructions, Bee-Bot, precise, video, record, inputting.	Background, filter, internet, blurred, crop, edit, resize, search engine, delete, download, save as.	Bar chart, data collection, labels, record, information, sort, pictogram, line graph.
<b>Year 2</b>	<b>What is a computer?</b>	<b>What is an algorithm?</b>	<b>How do you use a word processor?</b>	<b>How can you create an animation?</b>	<b>What sounds and images will you create?</b>	<b>How will present your ideas?</b>
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.	Online Safety Recognise common uses of information technology beyond school	Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.	Use technology purposefully to create, organise, store, manipulate and retrieve digital content.	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.
<b>Core Vocabulary</b>	battery, buttons, camera, computer, desktop, device, digital, digital recorder, electricity, function, input, invention, keyboard, laptop, monitor, mouse, output, paying till, scanner, screen, system,	algorithm decomposition algorithm, data artificial intelligence algorithm, loops abstraction unnecessary zoomed in key features debugging, bugs error, correcting	Backspace, bold, copy, copyright, cut, delete, forward button, highlight home row, home screen, image, import, italics, keyboard, keyword, layout, navigate, paste, redo, search, space bar, text, text	Algorithm, animation, blocks, bug, button CGI, computer code, debug, fluid, icon imitate, instructions, loop, 'On tap', programming, repeat, ScratchJR, sequence, sound recording	Animation, background, decompose, digital device, drawing, flipbook, frames, moving images, object, onion skinning, plan, still images	Algorithm, astronaut, data, digital, digital content, experiment, galaxy, insulation, interactive map, International Space Centre, International Space Station, interpret, laboratory, monitor, planet, satellite, sensor,

	tablet, technology, video, wires		effects, touch typing, underline, undo, word processing			space, temperature, thermometer, water reservoir
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By the end of Key Stage 1 children as **Computer Learners** will:

- Learning where keys are located on the keyboard.
- Understanding what a computer is and that it's made up of different components.
- Recognising that buttons cause effects and that technology follows instructions.
- Developing confidence with the keyboard and the basics of touch typing.
- Using a basic range of tools within graphic editing software.
- Developing control of the mouse through dragging, clicking and resizing of images to create different effects.
- Developing understanding of different software tools.
- Developing word processing skills, including altering text, copying and pasting and using keyboard shortcuts.
- Using word processing software to type and reformat text.
- Learning that decomposition means breaking a problem down into smaller parts.
- Using decomposition to solve unplugged challenges.
- Using logical reasoning to predict the behaviour of simple programs.
- Developing the skills associated with sequencing in unplugged activities.
- Following a basic set of instructions.
- Assembling instructions into a simple algorithm.
- Articulating what decomposition is.
- Decomposing a game to predict the algorithms used to create it. Learning that there are different levels of abstraction.
- Explaining what an algorithm is.
- Following an algorithm.
- Creating a clear and precise algorithm.
- Programming a Floor robot to follow a planned route.
- Learning to debug instructions when things go wrong.
- Learning to debug an algorithm in an unplugged scenario.
- Using logical thinking to explore software, predicting, testing and explaining what it does.
- Using an algorithm to write a basic computer program.
- Logging in and out and saving work on their own account.
- When using the internet to search for images, learning what to do if they come across something online that worries them or makes them feel uncomfortable.
- Understanding how to interact safely with others online.
- Recognising how actions on the internet can affect others.
- Recognising what a digital footprint is and how to be careful about what we post.
- Learning how to create a strong password.
- Understanding how to stay safe when talking to people online and what to do if they see or hear something online that makes them feel upset or uncomfortable
- Identifying whether information is safe or unsafe to be shared online.
- Learning to be respectful of others when sharing online and ask for their permission before sharing content.

- Learning strategies for checking if something they read online is true.

#### Key Vocabulary

Log in/log out, mouse, click, keyboard, screen, password, account, software, Ctrl, tools, right click, menu, layers, username, drag, drag and drop, digital photograph, undo, cursor, algorithm, bug, chunks, clear, code, debug, device, directions, input, instructions, manageable, motion, order, organise, output, precise, programme, robot, sensor, sequence, solution, specific, steps, tasks, cells, create, data, design, digital content, document, folder, photo, robot, save, sequence, share, software, spreadsheet, table, code, Bee-Bot, crop, delete, import, edit, interest, safety, personal information, respect, smart device, smartphone, smart TV, strangers, tablet, wireless.

battery, buttons, camera, computer, desktop, device, digital, digital recorder, electricity, function, input, invention, keyboard, laptop, monitor, mouse, output, paying till, scanner, screen, system, tablet, technology, video, wires  
backspace, bold, copy, copyright, cut, delete, forward button, highlight, home row, home screen, image, import, italics, keyboard, keyboard character, keyword, layout, navigate, paste, redo, search, space bar, text, text effects, touch typing, underline, undo, word processing  
algorithm, astronaut, data, digital, digital content, experiment, galaxy, insulation, interactive map, International Space Centre, International Space Station, interpret, laboratory, monitor, planet, satellite, sensor, space, temperature, thermometer, water reservoir  
accept, comment, consent, content, deny, emojis, offline, online, password, permission, personal information, pop-ups, pressure, private information, reliable, share, terms and conditions, trusted adult

Year	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 3	How does this work?	How do I change this?	What do the parts of a computer do?	Can I code?	How do you make a trailer?	What is a database?
Online safety use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	Transition to Kapow –Unit 1 Begin to understand computer networks including the internet. Write and debug programs that accomplish specific goals	Use logical reasoning to explain how some simple algorithms work. Solve problems by decomposing them into smaller parts	Use technology safely, respectfully and responsibly. Use logical reasoning to explain how some simple algorithms work	Begin to write and debug programs that accomplish specific goals, including controlling or simulating physical systems. Begin to 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. Begin to 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 to present information.	Begin to 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 that present data.
<b>Core Vocabulary</b>	Fact, opinion, internet, belief, reliability, search engine, input, output, graphics, editing software, digital	Internet, content, block & report, privacy settings, backspace, delete, keyboard, spacebar, touch typing,	Input, output, monitor, RAM – random access memory, ROM – read only memory, CPU – central processing unit,	Microbit, program, code, icon, flash, sensor, react, LED display	Dip to black, film editing software, storyboard, camera angle, cross blur, cross zoom, film, edit,	Categorise, database, category, data, chart, fields, filter, graph, information, interpret, PDF, questionnaire,



- Using decomposition to explain the parts of a laptop computer.
- Using decomposition to explore the code behind an animation.
- Using repetition in programs.
- Using logical reasoning to explain how simple algorithms work.
- Explaining the purpose of an algorithm.
- Forming algorithms independently.
- Using decomposition to solve a problem by finding out what code was used.
- Using decomposition to understand the purpose of a script of code.
- Identifying patterns through unplugged activities.
- Using abstraction to identify the important parts when completing both plugged and unplugged activities.
- Using logical thinking to explore more complex software; predicting, testing and explaining what it does.
- Incorporating loops to make code more efficient.
- Continuing existing code.
- Creating algorithms for a specific purpose.
- Coding a simple game.
- Using abstraction and pattern recognition to modify code.
- Incorporating variables to make code more efficient.
- Understanding what the different components of a computer do and how they work together.
- Drawing comparisons across different types of computers.
- Learning about the purpose of routers.
- Using tablets or digital cameras to film a weather forecast.
- Understanding that weather stations use sensors to gather and record data which predicts the weather.
- Understanding the role of the key components of a network.
- Identifying the key components within a network, including whether they are wired or wireless.
- Understanding that websites and videos are files that are shared from one computer to another.
- Learning about the role of packets.
- Understanding how networks work and their purpose.
- Recognising links between networks and the internet.
- Learning how data is transferred.
- Understanding that computer networks provide multiple services, such as the World Wide Web, and opportunities for communication and collaboration.
- Taking photographs and recording video to tell a story.
- Using software to edit and enhance their video adding music, sounds and text on screen with transitions.
- Use online software for documents, presentations, forms and spreadsheets.
- Using software to work collaboratively with others.
- Understanding why some results come before others when searching.
- Understanding that information found by searching the internet is not all grounded in fact.
- Searching the internet for data.
- Understanding that data is used to forecast weather.



- Recording data in a spreadsheet independently.
- Sorting data in a spreadsheet to compare using the 'sort by...' option.
- Designing a device which gathers and records sensor data.
- Recognising how social media platforms are used to interact.
- Understanding that software can be used collaboratively online to work as a team.
- Recognising that different information is shared online including facts, beliefs and opinions.
- Learning how to identify reliable information when searching online.
- Learning how to stay safe on social media.
- Considering the impact technology can have on mood.
- Learning about cyberbullying.
- Learning that not all emails are genuine, recognising when an email might be fake and what to do about it.
- Recognising that information on the internet might not be true or correct and that some sources are more trustworthy than others.
- Learning to make judgements about the accuracy of online searches. Identifying forms of advertising online.
- Recognising what appropriate behaviour is when collaborating with others online.
- Reflecting on the positives and negatives of time spent online.
- Identifying respectful and disrespectful online behaviour.

#### Key Vocabulary

e-safety, technology, network, program, World Wide Web, data, spreadsheet, software, social media, cyberbullying, online, algorithms, coding, variables, input, output, router, search engine, communication, collaboration, fact, belief, opinion, fake news, block

Year	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<b>Year 5</b>	<b>What systems can I use? Kapow Transition Unit 1</b>	<b>What is a Microbit? Kapow Transition unit 2</b>	<b>How does a computer know where to look? Kapow Computing systems and Networks : Search Engines</b>	<b>Can computers make music? Kapow Programming 1 : Music</b>	<b>Can I make a movie from pictures? Creating media: Stop motion animation</b>	<b>How do computers work in space? Data handling: Mars Rover 1</b>
Online safety use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a	Use sequence, selection, and repetition in programs; work with variables and various	Use logical reasoning to explain how some simple algorithms work.	Understand computer networks including the internet; how they can provide multiple services, such as the	Select, use and combine a variety of software (including internet services) on a range of digital devices to design and	Select, use and combine a variety of software (including internet services) on a range of digital devices to design and	Select, use and combine a variety of software (including internet services) on a range of digital devices to collecting,

range of ways to report concerns about content and contact.	forms of input and output. Select, use and combine a variety of software to present data.	Solve problems by decomposing them into smaller parts	world wide web; and the opportunities they offer for communication and collaboration.	create a range of programs, systems and content that accomplish given goals presenting information. Design, write and debug programs that accomplish specific goals; solve problems by decomposing them into smaller parts.	create a range of programs, systems and content that accomplish given goals presenting information. Design, write and debug programs that accomplish specific goals; solve problems by decomposing them into smaller parts.	analysing, evaluating and presenting data and information. Understand computer networks and the opportunities they offer for communication and collaboration
<b>Core Vocabulary</b>	Home row, key , typing, space bar, backspace, Word, word processor, import, Letters, punctuation, computer, desktop, laptop, mouse, monitor, buttons, abstraction, computational thinking, pattern, recognition, algorithm, design, decompose	Algorithm, animation App, blocks, Bluetooth, code block, connection, create, debug, decompose, designing, desktop, device, download, images, input, instructions, laptop, load, loop, Micro:bit, outputs, pairing, pedometer, polling, predict, program, repetition, reset, sabotage, scoreboard, scree, systematic, tablet, tinkering, USB, variables, Wifi,, wireless, wire	data leak, data privacy, network, online, search engine, website, correct, deceive, fake news, inaccurate information, real, copyright, credit, fair, inappropriate, algorithm, index, page rank, search engine, web crawler	Sonic Pi, Tinker, predict, programming, music, typing, spacing, performance, coding, tutorials, error, command, instructions, debugging, typo	Animation, still images, moving images, thaumatrope, flip book, zoetrope, frames, plan, storyboard, stop motion, digital device, onion skinning, character, model, frame, background.	Data, transmission, discovery, distance, Rover, moon, planet scientist, signal, 8-bit binary, binary code, numerical data, sequence, byte, CPU, input, output, RAM, simulation
<b>Year 6</b>	<b>What do I need to know?</b> Kapow Primary Transitional Unit 1	<b>Can you crack the code?</b> Kapow Primary Bletchley Park	<b>What does the future hold for computing?</b> Kapow Primary History of computers	<b>What happens when we explore a program?</b> Kapow Primary Transitional Unit 2	<b>What does data show?</b> Kapow Primary Big Data 1	<b>How does that happen?</b> Kapow Primary Introduction to Python



- Decomposing animations into a series of images.
- Decomposing a story to be able to plan a program to tell a story.
- Predicting how software will work based on previous experience.
- Writing more complex algorithms for a purpose.
- Decomposing a program into an algorithm.
- Using past experiences to help solve new problems.
- Writing increasingly complex algorithms for a purpose.
- Learning that external devices can be programmed by a separate computer.
- Learning about the history of computers and how they have evolved over time.
- Using the understanding of historic computers to design a computer of the future.
- Understanding and identifying barcodes, QR codes and RFID.
- Identifying devices and applications that can scan or read barcodes, QR codes and RFID.
- Using logical thinking to explore software more independently, making predictions based on their previous experience.
- Using software programme Sonic Pi/Scratch to create music.
- Using the video editing software to animate.
- Identify ways to improve and edit programs, videos, images etc. Independently learning how to use 3D design software package TinkerCAD.
- Using logical thinking to explore software independently, iterating ideas and testing continuously.
- Using search and word processing skills to create a presentation.
- Developing searching skills to help find relevant information on the internet.
- Understanding how search engines work.
- Understanding how data is collected in remote or dangerous places.
- Understanding how data might be used to tell us about a location.
- Understanding how barcodes, QR codes and RFID work.
- Gathering and analysing data in real time.
- Creating formulas and sorting data within spreadsheets.
- Learn about different forms of communication that have developed with the use of technology.
- Learning how 'big data' can be used to solve a problem or improve efficiency.
- Identifying possible dangers online and learning how to stay safe.
- Evaluating the pros and cons of online communication.
- Recognising that information on the internet might not be true or correct and learning ways of checking validity.
- Learning what to do if they experience bullying online.
- Learning to use an online community safely.
- Learning about the positive and negative impacts of sharing online.
- Learning strategies to create a positive online reputation.
- Understanding the importance of secure passwords and how to create them.
- Learning strategies to capture evidence of online bullying in order to seek help.
- Using search engines safely and effectively.
- Recognising that updated software can help to prevent data corruption and hacking.

