

NMPF Computing planning and assessment document

Details of our 6 computing units for each year group appear below. These cover all areas of the computing national curriculum including: **computer science**, **information technology** and **digital literacy**.

Key Stage 1 Computing National Curriculum

Pupils should be 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.

Year	Computational Thinking – Barefoot Activities	Programming – Bee Bots	Programming – Daisy the Dino
1	<p>Learning objectives:</p> <p>Barefoot Crazy Characters Do I know what an algorithm is? Can I write an algorithm? Can I debug my algorithm?</p> <p>Barefoot Elephants, Cats and Cars Can I say what is the same? Can I say what is different?</p> <p>Barefoot Getting Ready for School Can I break down a problem into smaller steps? Can I create a sequence of instructions for someone to follow? Do I understand that the order of instructions is important?</p>	<p>Learning objectives:</p> <p>Can I write an algorithm for an everyday activity? Can I give and follow instructions, including turning movements, one at a time? Can I create an algorithm to guide your robot partner? Can I write an algorithm for a Bee Bot to complete a maze? Can I program a Bee Bot with directional commands?</p>	<p>Learning Objectives:</p> <p>Can I write an algorithm to make a jam sandwich? Can I explore the Daisy the Dinosaur app? Can I write a storyboard for Daisy the Dino? Can I program and debug an animation designed for Daisy the Dinosaur?</p>
	Information Technology – Puppet Pals	Digital Literacy / E-Safety	Basic Skills

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<p>Learning objectives: Can I decide what characters and settings to use? Can I create a storyboard? Can I choose characters and settings? Can I record a story? Can I edit a story? Can I change the format or backgrounds?</p>	<p>Learning objectives: Can I recognise, online or offline, that anyone can say 'no' - 'please stop' - 'I'll tell' - 'I'll ask' to somebody who makes them feel sad, uncomfortable, embarrassed or upset? Can I describe ways that some people can be unkind online? Can I identify ways that I can put information on the internet? Can I identify some simple examples of my personal information (e.g. name, address, birthday, age, location)? Can I give examples of how I (might) use technology to communicate with people I know? Can I talk about how to use the internet as a way of finding information online?</p>	<p>Learning objectives: Can I type using upper and lower case letters? Can I use the spacebar, backspace and delete button? Can I change text using bold, italic, underline and change size? Can I use punctuation appropriate to English objectives?</p>
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Year	Computational Thinking – Barefoot Activities	Programming - Astro Animation ScratchJr	Programming – Topic Animation in ScratchJr
2	<p>Learning objectives: Barefoot Tut, Clap and Jive Can I break a sequence of moves down into its parts? Can I decompose a sequence? Can I say why this is useful? Can I say how decomposition is used when creating computer programs like animations or games? Barefoot Sharing Sweets I know what an algorithm is? Can I write an algorithm? Can I use an algorithm? Can I spot patterns in algorithms? Barefoot Speed Drawing Can I say what is important and I must include? Can I say what is unimportant and I can ignore? Can I say how a computer program (for example, a computer simulation or game) includes what is important?</p>	<p>Learning Objectives: Do I understand what algorithms are? Do I understand how algorithms are implemented as programs on digital devices? Can I create and debug simple programs? Can I use logical reasoning to predict the behaviour of simple programs ?</p>	<p>Learning Objectives: Can I design an algorithm for an animation linking to topic – include more than one scene? Can I implement the algorithm as code in ScratchJr? Can I create and debug program employing more than one scene ? Can I use logical reasoning to predict the behaviour of simple programs ?</p>

	Information Technology – Book Creator	Digital Literacy / E-Safety	Basic Skills (Use assessment sheets to recap skills not done in Y1.)
	<p>Learning objectives:</p> <ul style="list-style-type: none"> Can I create a new E-Book? Can I add text, pictures and sound recordings to your book? Can I change the format of text? Can I evaluate mine and others' books with what I like and what could be improved? Can I edit the book to show improvements? 	<p>Learning objectives:</p> <ol style="list-style-type: none"> 1. If something happens that makes me feel sad, worried, uncomfortable or frightened, Can I give examples of when and how to speak to an adult I can trust and how they can help? 2. Can I explain who I should ask before sharing things about myself or others online? 3. Can I explain how information put online about someone can last for a long time? 4. Can I explain what bullying is, how people may bully others and how bullying can make someone feel? 5. Do I know how to get help from a trusted adult if we see content that makes us feel sad, uncomfortable, worried or frightened? 6. Can I explain why some information I find online may not be real or true? 	<p>Learning objectives:</p> <ul style="list-style-type: none"> Can I use the undo and redo button? Can I save work into a file? Can I highlight text by clicking and dragging? Can I change the colour of text? Can I align text using the left, centre and right tool? Can I use the spell check tool? Can I change the layout?

Key Stage 2 Computing National Curriculum

Pupils should be taught to:

- 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; and the opportunities they offer for communication and collaboration
- use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
- 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

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

Year	Programming – Intro to Scratch	Networks	Programming (Makey Makey Ukele)
3	Learning Objectives: Can I write an algorithm for an animation in Scratch? Can I use different inputs to trigger commands in Scratch? Can I add/edit sprites and backgrounds in Scratch? Can I write a program using a sequence of commands in Scratch? Can I debug a Scratch program?	Learning Objectives: Do I understand that the computers in a school are connected together in a network? Do I understand why computers are networked? Do I understand the difference between the Internet and the World Wide Web (WWW)?	Learning Objectives: Can I use physical inputs to control a program? Can I use selection in programs? Can I work with various forms of output? Can I debug my program in Scratch?
	Information Technology – Comic Life	Digital Literacy / E-Safety	Basic Skills (Use assessment sheets to recap skills not done in Y1 and 2.)

	<p>Learning Objectives: Can I create a storyboard? Can I choose layout? Can I insert and edit text boxes? Can I insert and edit images? Can I insert and edit text? Can I change the format of text? Can I evaluate mine and others' presentation - what they like and what could be improved? Can I edit work to show improvements?</p>	<p>Learning Objectives: Can I explain how people can represent themselves in different ways online? Can I 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? Can I 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? Can I give examples of how bullying behaviour could appear online and how someone can get support? Can I explain what autocomplete is and how to choose the best suggestion? Can I give reasons why someone should only share information with people they choose to and can trust?</p>	<p>Learning Objectives: Note – In Year 3 moving from app based to Word. Recap LOs from Year 1/2 as required. Can I align text? Can I move a word or sentence? Can I use the copy and paste tool? Can I proofread by using the grammar and spelling tool? Can I insert a table if required? Can I insert a picture from a file? Can I save a file to an appropriate location and open? Can I format shapes? (Change border/thickness)</p>
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Year	Programming – Beetle Blocks (& 3D Printer)	Networks	Data - Olympics
4	<p>Learning objectives: Can i turn an algorithm into a program to draw a regular polygon? Can I use repetition commands to draw regular polygons? Can I use nested repetition to draw geometric patterns? Can I save files as STL format for 3D printing?</p>	<p>Learning objectives: Do I understand that servers on the Internet are located across the planet? Do I understand how email is sent across the Internet? Do I understand how the Internet enables use to collaborate?</p>	<p>Learning objectives: Can I decide what data to gather? Can I gather data? Can I set up and enter data into a spreadsheet? Can I navigate around a spreadsheet using rows and columns? Can I create formulas to calculate data in spreadsheets? Can I modify spreadsheets?</p>
	Information Technology – I can animate/iMovie	Digital Literacy / E-Safety	Basic Skills (Use assessment sheets to recap skills not done in Y1,2,3.)

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<p>Learning objectives: Can I produce a storyboard? Can I make models for the story? Can I produce animation using stills? (Stands are available for this)? Can I edit story and scenes? Can I export to imovie? Can I insert sound and voiceover? Can I insert titles and credits?</p>	<p>Learning objectives: Can I describe positive ways for someone to interact with others online and understand how this will positively impact on how others perceive them? Can I give examples of how to be respectful to others online and describe how to recognise healthy and unhealthy online behaviours? Can I explain who someone can ask if they are unsure about putting something online? Can I explain how anyone can get help if they are being bullied online and identify when to tell a trusted adult? Can I explain the difference between a 'belief', an 'opinion' and a 'fact. and can give examples of how and where they might be shared online, e.g. in videos, memes, posts, news stories etc? Can I explain what a strong password is and demonstrate how to create one?</p>	<p>Learning objectives: Can I indent a piece of text using the tab tool? Can I edit a table by adding/deleting columns and rows? Can I copy and paste text using the Ctrl C and Ctrl V tool? Can I save piece of work as a pdf or jpeg? Can I format shapes by rotating the angle? Can I group and ungroup text and pictures? Can I layer objects and text. (Send to back, bring to front)?</p>
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Year	Programming – Kodu Game	Networks	Programming – Sphero Maze
5	<p>Learning objectives: Can I create a 3D world in Kodu? Can I identify selection in Kodu? Do I understand the when and do function? Can I use selection to create an end to a game? Can I use selection to adapt the Coin Quest game?</p>	<p>Learning objectives: Do I understand how we view web pages on the Internet? Can I use search technologies effectively? Do I understand that web spiders index the web for search engines? Do I appreciate how pages are ranked in a search engine?</p>	<p>Learning objectives: Can I tinker with a programming language to learn about the commands? Can I apply my understanding of geometry to create a program? Can I use selection commands in my program? Can I adapt a program to improve it?</p>

	Information Technology - PowerPoint	Digital Literacy / E-Safety	Basic Skills
	<p>Learning objectives: Can I insert text and images? Can I resize text and images? Can I insert transitions? Can I insert sound and music? Can I produce hyperlinks to other pages? Can I produce hyperlinks to web pages? Can I present findings to an audience?</p>	<p>Learning objectives: Can I explain how identity online can be copied, modified or altered? Can I explain that there are some people I communicate with online who may want to do me or my friends harm? I can recognise that this is not my / our fault. Can I describe ways that information about anyone online can be used by others to make judgments about an individual and why these may be incorrect? Can I describe the helpline services which can help people experiencing bullying, and how to access them (e.g. Childline or The Mix)? Can I describe how fake news may affect someone's emotions and behaviour, and explain why this may be harmful? Can I explain how many free apps or services may read and share private information (e.g. friends, contacts, likes, images, videos, voice, messages, geolocation) with others.</p>	<p>Learning objectives: Recap basic skills if any children have not achieved skills in Y1-4.</p>

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Year	Programming – micro:bits	Computer Science - Networks	Data – Pizza Party - Spreadsheets
6	<p>Learning objectives: Can I design, write and debug a program to control a physical system? Can I use various forms of output including LEDs and a speaker? Can I use variables within my program? Can I use selection to control the flow of my program?</p>	<p>Learning objectives: Do I understand what HTML is and recognize HTML tags? Do I know a range of HTML tags and remix a web page? Can I create a webpage using HTML?</p>	<p>Learning objectives: Do I understand how spreadsheets can help me to solve problems, and am I familiar with the spreadsheet modelling cycle? Can I collect and enter data values into a spreadsheet, and predict what a change to a spreadsheet will do?</p>
	Information Technology – TinkerCAD and 3D Printer	Digital Literacy / E-Safety	Basic Skills
	<p>Learning objectives: Can I tinker with a CAD package to explore what it can do? Can I use solid basic shapes to construct a 3D object? Can I use 3D 'holes' to create cuts in my 3D object? Can I alter the size of objects? Can I export and prepare my object for 3D printing?</p>	<p>Learning objectives: Can I identify and critically evaluate online content relating to gender, race, religion, disability, culture and other groups, and explain why it is important to challenge and reject inappropriate representations online? Can I describe how things shared privately online can have unintended consequences for others. e.g. screen-grabs? Can I explain strategies anyone can use to protect their 'digital personality' and online reputation, including degrees of anonymity? Can I describe how to capture bullying content as evidence (e.g screen-grab, URL, profile) to share with others who can help me? Can I describe the difference between online misinformation and dis-information? Can I describe ways in which some online content targets people to gain money or information illegally; I can describe strategies to help me identify such content (e.g. scams, phishing)?</p>	<p>Learning objectives: Recap basic skills if any children have not achieved skills in Y1-4.</p>

Computing Curriculum Overview

	A1	A2	SP1	SP2	SM1	SM2
Y1	E safety- Evolve unit	Comp thinking – Barefoot Crazy characters	Programming – Bee bots	Information technology – Puppet pals	Computer Science - Programming – Daisy the Dino	Basic skills
Y2	E safety Evolve unit	Comp thinking – Barefoot Tut, Clap and Jive	Programming – Scratch Junior	Information technology – Book Creator	Programming – Scratch Junior	Basic skills
Y3	E safety Evolve unit	Programming – Scratch	Computer Science – Computer networks	Information Technology – Comic Life	Programming – Makey Makey	Basic skills
Y4	E safety Evolve unit	Programming – Beatle bots	Computer Science – Computer networks	Information technology – Animation	Programming – Spreadsheets / Data	Basic skills
Y5	E safety Evolve unit	Programming – Kodu	Basic skills	Information Technology – Powerpoint	Programming – Spheros	Computer science –Computer networks
Y6	E safety Evolve unit	Information Technology - Computer Aided Design	Basic skills	Programming – Mirco – bits	Programming – Spreadsheets / Data	Computer science -Computer networks

Computing science	Information Technology	Digital literacy
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