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COMPUTING INTENT

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Computing - Intent

Through the Computing curriculum at Barrow Primary School, we aim to give our pupils the life-skills necessary to embrace and utilise technology in a safe and responsible manner. We believe that through our computing teaching, we are preparing children for workplaces of the future, jobs that may not have even been invented yet, and giving them the skills to truly thrive in the 21st century. Children will become independent users of a range of technologies and devices to become digitally literate. Our programme provides opportunities to develop computational thinking and problem solving skills as well as creativity and resilience. We use a variety of hardware and software to support learning across the curriculum and in bespoke practices to ensure accessibility for every child. We aim to instil a love of computing in our pupils to encourage further study of the subject and create digital citizens with an understanding of themselves within their local and global community.

Aims of the Computing Curriculum

The national curriculum for Computing aims to ensure that all pupils:

- understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation
- analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems
- evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems
- become responsible, competent, confident and creative users of information and communication technology.

Our Computing curriculum allows children to create digital work through a range of hardware and software. There is focus on the. Pupils are able to express their opinions of artwork with sophisticated use of language.

- Computational thinking (abstraction, decomposition, pattern recognition and algorithms)
- E-safety
- Digital literacy
- Computers and hardware

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Key Chain Schemes of Work

KeychainCOMPUTING

Opening the lock to learning

INFINI

Outline scheme of work

The units in each year group can be taught in any order except for the 2 programming units, where A must be delivered before B.

1	Technology around us	Digital painting	Digital writing	Grouping data	Moving robots	Animation
2	IT around us	Digital photography	Making music	Pictograms	Algorithms	Quizzes
3	Connecting computers	Animations	Desktop publishing	Branching databases	Sequences	Events and actions
4	The internet	Audio editing	Photo editing	Data logging	Repetition	Repetition in games
5	Sharing information	Vector drawing	Video editing	Databases	Selection	Selection in quizzes
6	Communication	3D modelling	Web pages	Spreadsheets	Variables	Sensing

Click on the links to see the progression maps and links to the National Curriculum

https://www.keychaincomputing.co.uk/sow

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Early Years

In the Early Years, computing is not explicitly mentioned. However, there are strands of the framework that connect to our Computing teaching at Westfield. Children in Early Years are encouraged to:

Computing			
Three and Four-Year-Olds	Personal, Social and Emotional Development		• Remember rules without needing an adult to remind them.
	Physical Development		• Match their developing physical skills to tasks and activities in the setting.
	Understanding the World		• Explore how things work.
Reception	Personal, Social and Emotional Development		• 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		• Develop their small motor skills so that they can use a range of tools competently, safely and confidently.
	Expressive Arts and Design		• Explore, use and refine a variety of artistic effects to express their ideas and feelings.
ELG	Personal, Social and Emotional Development	Managing Self	• 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	• Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.

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Year One
NCCE Curriculum Map

			Computer suite/ipads?	Tech/resources	Evidence	NC links
Term 1a	**Computing systems and Networks**	**Technology around us**	CS Mouse and keyboard skills	paintz.app	Screenshots and formative assessment	• Recognise common uses of information technology beyond school • Use technology purposefully to create, organise, store, manipulate, and retrieve digital content
Term1b	**Creating Media**	**Digital Painting**	CS or ipads if using paintz.app		Screenshots and formative assessment	• Use technology purposefully to create, organise, store, manipulate, and retrieve digital content
Term 2a	**Creating Media**	**Digital Writing**	CS need a word processing document	Google docs or microsoft word	Saved documents onto the server	• Use technology purposefully to create, organise, store, manipulate and retrieve digital content • Use technology safely and respectfully, keeping personal information private
Term 2b	**Data and information**	**Grouping data**	CS	Google docs or microsoft word	Saved documents onto the server	• Use technology purposefully to create, organise, store, manipulate and retrieve digital content • Use technology safely and respectfully
Term 3a	**Programming A**	**Moving a Robot**	Classroom	Beebots	Formative assessment, photographs and examples of chn's planned routes	• 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
Term 3b	**Programming B**	**Introduction to Animation**	ipads	Scratch Jnr	Screenshots of code and formative assessment	• 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

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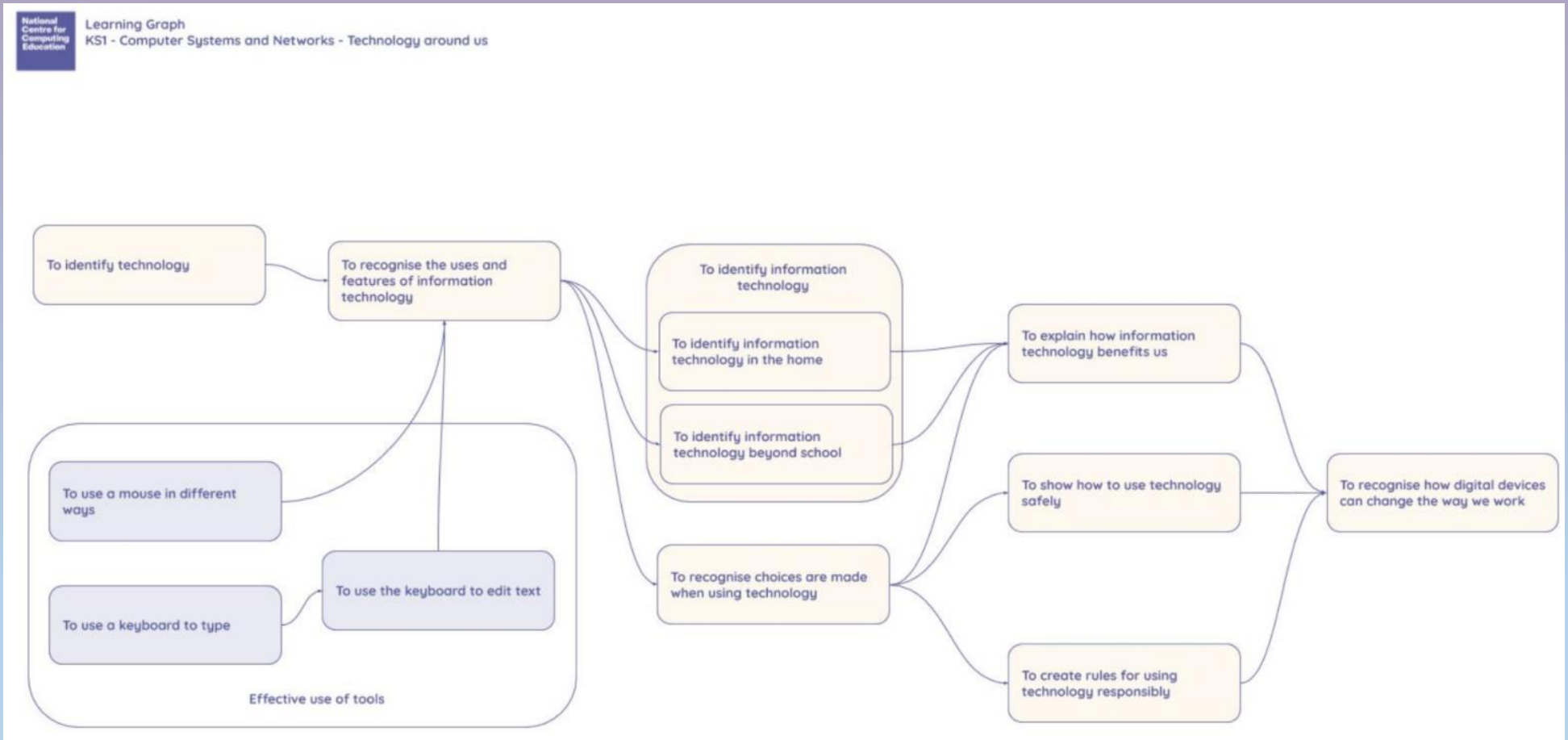
Year One

Example of Learning Graph



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Year Two
NCCE Curriculum Map

			Computer suite/ip	Tech/resource	Evidence	NC links
Term 1a	Computing systems and Networks	IT around us	CS for lesson 2		Class brainstorm and formative assessment	• Recognise common uses of information technology beyond school
Term1b	Creating Media	Making Music	CS for lessons 3-6	The Planets- Holst Percussion instruments, Chrome Music lab	Saved work in Chrome Music lab and formative assessment	• Use technology purposefully to create, organise, store, manipulate and retrieve digital content
Term 2a	Creating Media	Digital Photography	ipads	Pixlr	Saved edited images and formative assessment	• Use technology purposefully to create, organise, store, manipulate, and retrieve digital content
Term 2b	Data and information	Pictograms	CS or ipads	Just 2 easy pictograms software	Screenshots of chns pictograms	• Use technology purposefully to create, organise, store, manipulate, and retrieve digital content • 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
Term 3a	Programming A	Robot Algorithms	Beebots		Photos and formative assessments	• 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
Term 3b	Programming B	Introduction to quizz	ipads	Scratch Jnr	Screenshots /saved examples of quizzes	• 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

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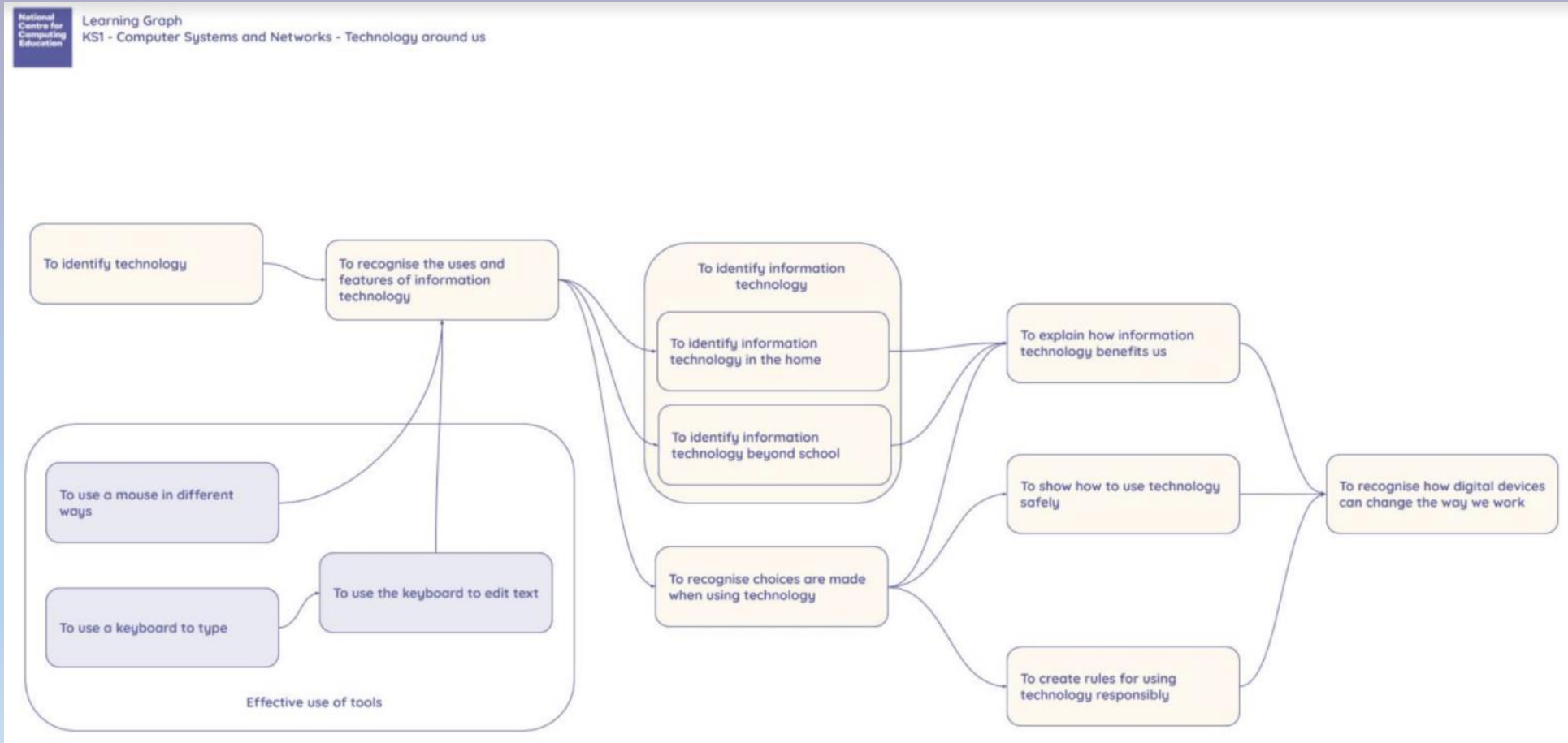
Year Two

Example of Learning Graph



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Year Three NCCE Curriculum Map

			Computer suite/ ipads?	Tech/resources	Evidence	Assessment	NC links
Term 1a	Computing systems and Networks	Connecting Computers	CS or ipads	Digital drawing software	Screenshots of work	Summative assessment quiz	• 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
Term1b	Creating Media	Animation	ipads	iMotion app	Animations saved to camera roll	Rubric	• 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
Term 2a	Creating Media	Desktop Publishing	CS	Microsoft publisher	Saved work into class folder on server	Rubric	• 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
Term 2b	Data and information	Branching Databases	CS or ipads	j2data	Screenshots of work	Summative assessment quiz	• 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 • Use technology safely, respectfully, and responsibly
Term 3a	Programming A	Sequence in Music	CS	Scratch scratch.mit.edu	Saved work into class folder on server	Rubric	• 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
Term 3b	Programming B	Events and Actions in programs	CS	Scratch scratch.mit.edu	Saved work into class folder on server	Summative assessment quiz	• 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 • 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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Year Three

Example of Learning Graph

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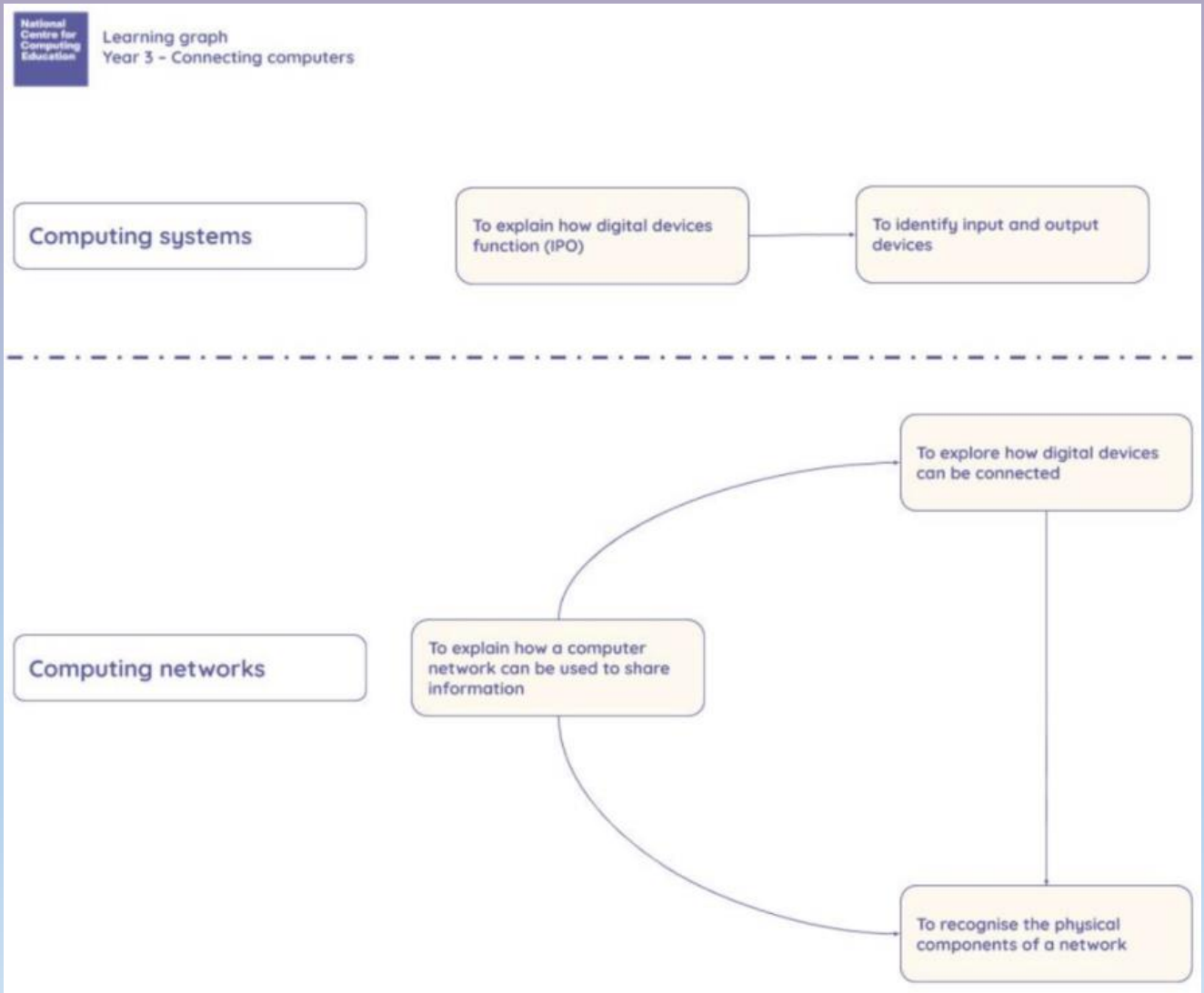

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Year Four
NCCE Curriculum Map

		Computer suite/ ipads?	Tech/ resources	Evidence	Assessment	NC links
Computing systems and Networks	**The Internet**	CS for some lessons	Chrome Music lab	Worksheets and screenshots/ saved websites	Summative assessment quiz	• 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
Creating Media	**Audio editing**	CS but need extra time for developing podcast content	Microphones , headphones and Audacity	Podcasts	Rubric	• 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 • Use technology safely, respectfully, and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact
Creating Media	**Photo editing**	CS (ipads if necessary)	getpaint.net	Edited images	Rubric	• 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, analysing, evaluating and presenting data and information
Data and information	**Data Logging**	CS with data loggers or ipads with google science journal	data loggers or google science journal	Data collection	Rubric	• ...work with various forms of input • 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
Programming A	**Repetition in shape**	CS with turtle academy or ipads with logotacular		Formative assessments and screenshots of coding	Summative assessment quiz	• 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
Programming B	**Repetition in game**	CS	Scratch	Saved games	Rubric	• 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

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Year Four

Example of Learning Graph

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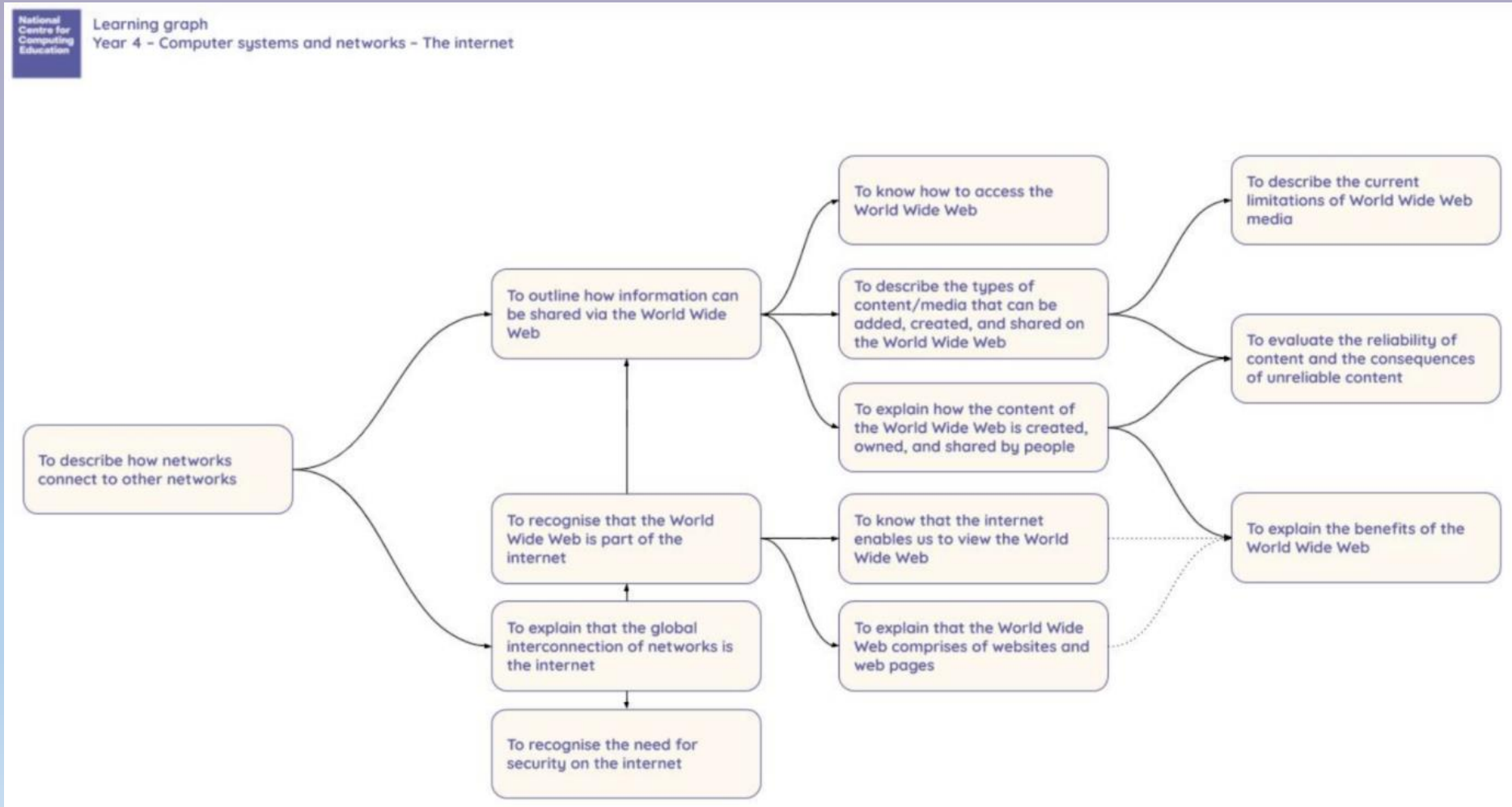

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Year Five NCCE Curriculum Map

Term 1a	Computing systems and Networks	Sharing Information	CS some lessons	PP or google slides and Scratch	Slides and scratch project/ screenshots	Summative Assessment quiz	• Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts • 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 • 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 • Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact
Term1b	Creating Media	Vector Drawing	ipads	google drawings app- can use publisher or pp if not	Images/files saved onto server or screenshots from ipads	Rubric	• 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.
Term 2a	Creating Media	Video editing	ipads- may need CS if can move files from ipads to server	ipads and imovie or window movie maker if transferred to server	Edited videos onto server	Rubric	• 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 Internet safety • Recognise inappropriate content, contact, and conduct and know how to report concerns • Use technology safely, respectfully, and responsibly; recognise acceptable/unacceptable behaviour • Identify a range of ways to report concerns about content and contact
Term 2b	Data and information	Flat-file databases	CS	j2data sample database	Screenshots of database	Summative Assessment quiz	• 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
Term 3a	Programming A	Selection in physical computing		Crumble controller 1:3	Photos, pupil comments and designs	Rubric	• 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
Term 3b	Programming B	Selection in quizzes	CS	Scratch	Saved scratch quizzes or screenshots and annotations	Summative assessment quiz	• 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

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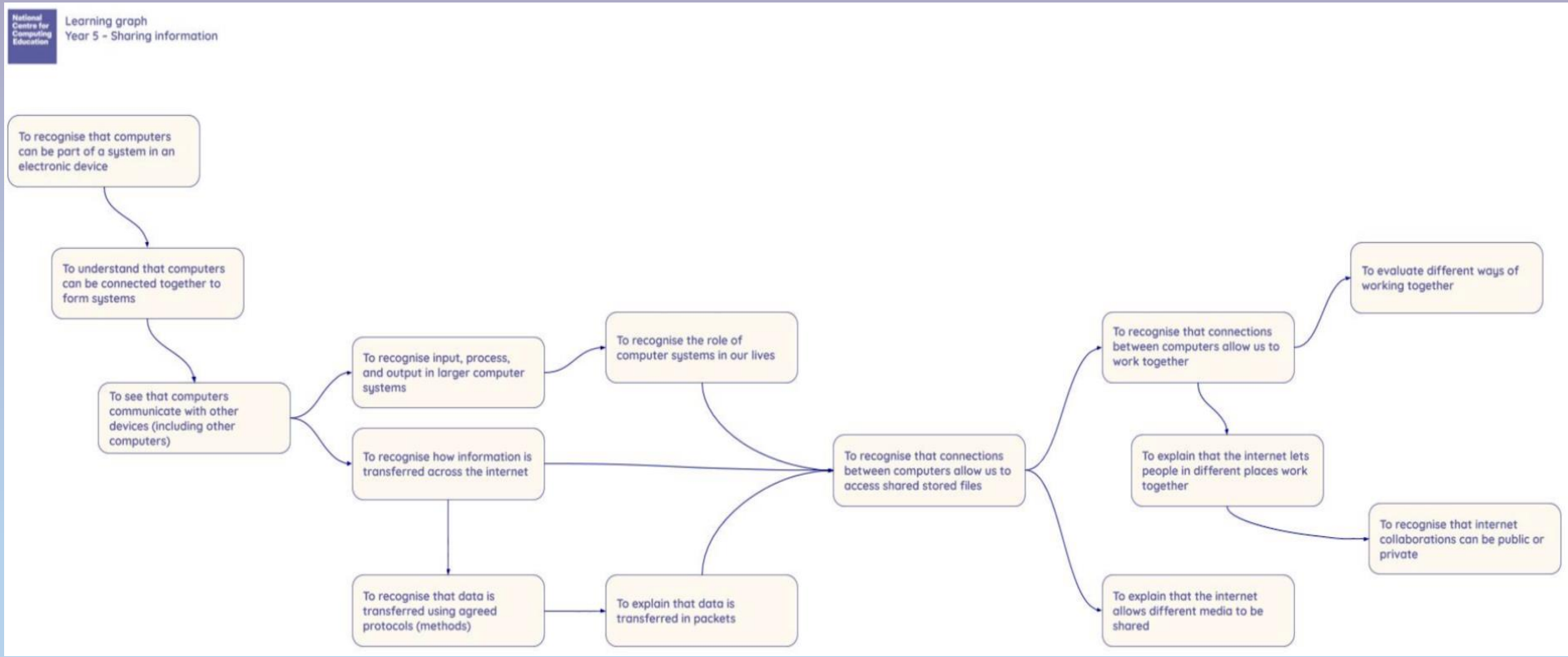
Year Five

Example of Learning Graph



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Year Six NCCE Curriculum Map

			Computer suite/ ipads?	Tech/ resources	Evidence	Assessment	NC links
Term 1a	Computing systems and Networks	Communication	ipads		web page design	Summative assessment quiz	• Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts • 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 • 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 • Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact
Term1b	Creating Media	3D Modelling	CS	Tinkercad- look at unit overview for details	Saved work on tinkercad	Rubric	• 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 • Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact
Term 2a	Creating Media	Web page creations	CS or ipads	Google sites	Saved sites and/or annotated screenshots	Rubric	• 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. • use technology safely, respectfully, and responsibly; recognise acceptable/unacceptable behaviour.
Term 2b	Data and information	Spreadsheets	CS	Google sheets or excel	Saved spreadsheets on server	Summative assessment quiz	• 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
Term 3a	Programming A	Variables in games	CS	Scratch	Saved scratch project/ annotated screenshots	Summative assessment quiz	• 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
Term 3b	Programming B	Sensing	CS	Micro:bits or makecode.microbit.org micro:bit emulator	Photos if using physical micro:bits and saved project URL	Rubric	• 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

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Year Six

Example of Learning Graph