Barrow CEVC Primary School

Inspire, Create, Discover, Together

COMPUTING INTENT

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

How do we know that our curriculum is having the desired impact?

Teachers	Children	Children's work
• Become more knowledgeable • Higher levels of confidence in delivering all aspects of the curriculum • Detailed understanding of how much children understand and can apply the taught content • Teach consistently well; applying pedagogical practices in all lessons • Plan learning sequences using progression of skills and knowledge • Understand how to identify any gaps in knowledge and skills and be able to address these • Gain advice and support from subject leads • Making learning across the curriculum accessible to all learners • High expectations and outcomes for all pupils across all subjects	• Can talk about what they have learned, using the correct terminology • Are enthused and interested in a wide range of curriculum areas • Can talk about specific characteristics of subjects • Can describe the 'why' behind their work • Demonstrate good learning behaviours in all lessons • Are able to explain how their learning within a subject builds on previous learning • Are able to make thoughtful links between subjects • Can all access, enjoy and make progress across the curriculum – regardless of their starting points or additional needs.	• Demonstrates that our children take pride in the work they produce • Children show the same effort and quality of work in all subjects • Shows their increasing understanding of key concepts • Shows a coherent teaching sequence within each unit of work • Demonstrates our curriculum's emphasis on subject specific terminology and vocabulary. • Children can enthusiastically talk about their work and what they have enjoyed and excelled in • Shows a variety of outcomes and within each of work across all subjects ie. Written work, photographs of practical work etc.
Visitors and Governors	• Give positive feedback about pupil engagement and behaviour in lessons and in pupil perception sessions • Comment on the high quality work they see • Recognise the knowledge and expertise of subject leaders in understanding the strengths and areas for development in their subjects	**Parents** • Give positive feedback about their child's attitude to school and their learning • Share examples of when their child has enjoyed their learning • Engagement of parents at parents evenings, open book sessions and conversations for pupils with SEND

Key Chain Schemes of Work

INTENT

Year	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
R	E-safety Sequencing	Music algorithms	Algorithms Coding Blocks	Sorting & Patterns	Handling Data	Handling Data
1	Computing Systems & Networks	Creating Media- Digital Painting	Programming A Moving a Robot	Creating Media- Digital Writing	Grouping Data	Programming B Intro to Animation
2	Computing Systems & Networks	Creating Media- Digital Photography	Creating Media- Making Music	Pictograms	Programming A Robot Algorithms	Programming B Intro to Quizzes
3	Computing Systems & Networks	Creating Media- Animation	Programming A Sequence in Music	Creating Media- Desktop Publishing	Branching Databases	Programming B Events & Actions
4	Computing Systems & Networks	Programming A Repetition in Shapes	Data Logging	Creating Media- Audio Editing	Programming B Repetition in Games	Creating Media- Photo Editing
5	Computing Systems & Networks	Flat file Databases	Programming A Physical Computing	Creating Media- Video Editing	Creating Media- Vector Drawing	Programming B Selection in Quizzes
6	Creating Media- Web Page Creation	Programming A Variables in Games	Spreadsheets	Computing Systems & Networks	Creating Media- 3D Modelling	Programming B Sensing

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

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 Barrow. 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.

INTENT

Computing	There are no early learning goals that directly relate to computing objectives, though it is still expected that children will be introduced to appropriate technology and use it within their provision.	**Computing** • 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 respectively, 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 technology.

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

Year One
Example of Learning Graph

Learning Graph
KS1 - Computer Systems and Networks - Technology around us

- To identify technology
- To recognise the uses and features of information technology
- To identify information technology
  - To identify information technology in the home
  - To identify information technology beyond school
- To explain how information technology benefits us
- To recognise how digital devices can change the way we work

Effective use of tools
- To use a mouse in different ways
- To use a keyboard to type
- To use the keyboard to edit text

- To recognise choices are made when using technology
- To show how to use technology safely
- To create rules for using technology responsibly

Year Two
NCCE Curriculum Map

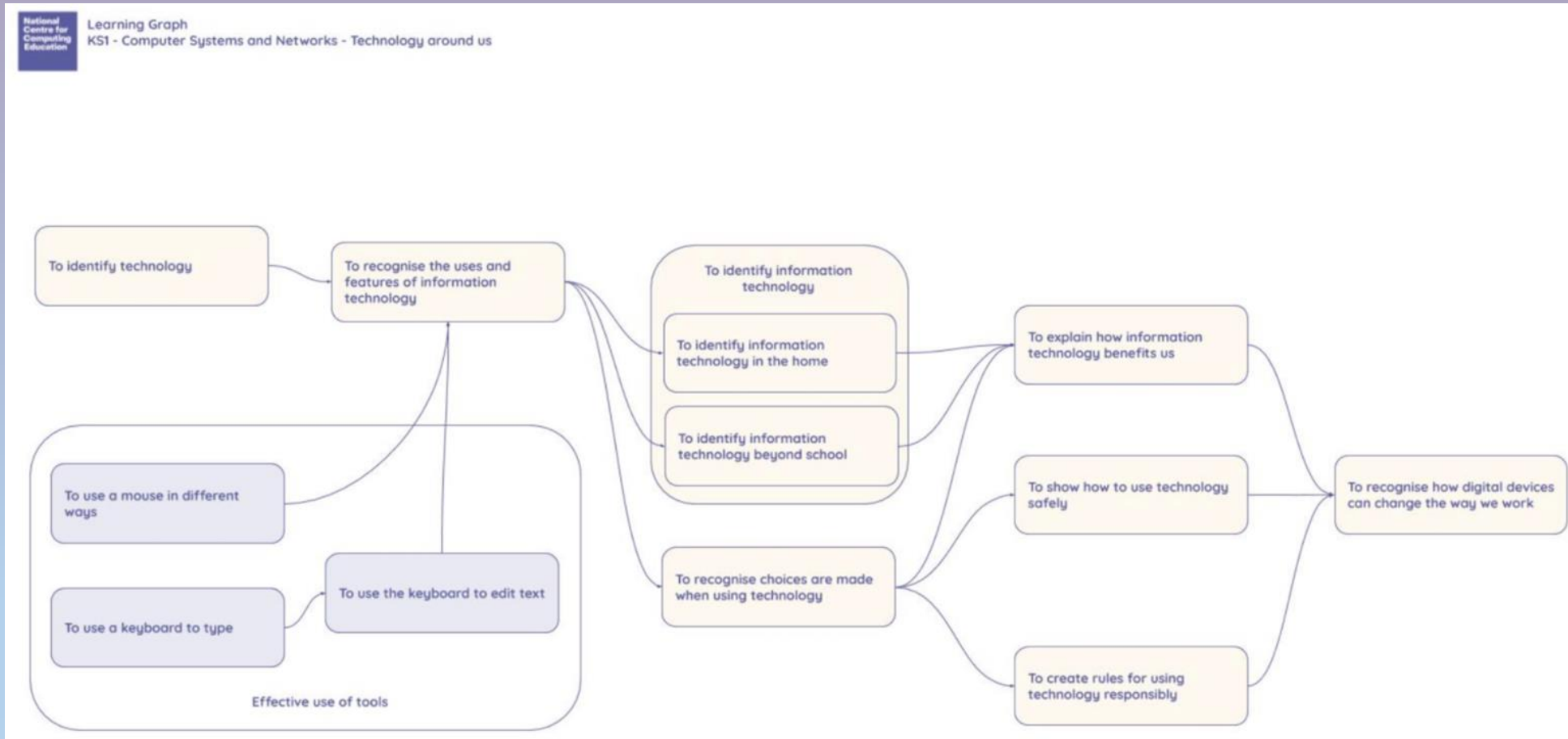|			Computer suite/ip	Tech/resource	Evidence	NC links
Term 1a	Computing systems and Networks	IT around us	CS for lesson 2		Class brainstorm and formative assessment	● Recognise common uses of information technology beyond school
Term1b	Creating Media	Making Music	CS for lessons 3-6	The Planets-Holst 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

INTENT

Year Two

Example of Learning Graph

Barrow CEVC Primary School
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Learning Graph
KS1 - Computer Systems and Networks - Technology around us

To identify technology → To recognise the uses and features of information technology

To identify information technology

To identify information technology in the home

To identify information technology beyond school

To explain how information technology benefits us

To use a mouse in different ways

To use a keyboard to type → To use the keyboard to edit text

To recognise choices are made when using technology

To show how to use technology safely

To recognise how digital devices can change the way we work

To create rules for using technology responsibly

Effective use of tools

Year Three
NCCE Curriculum Map

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			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...

Year Three
Example of Learning Graph

INTENT

National Centre for Computing Education

Learning graph
Year 3 – Connecting computers

Computing systems

To explain how digital devices function (IPO) → To identify input and output devices

Computing networks

To explain how a computer network can be used to share information

To explore how digital devices can be connected

To recognise the physical components of a network

Year Four
NCCE Curriculum Map

INTENT

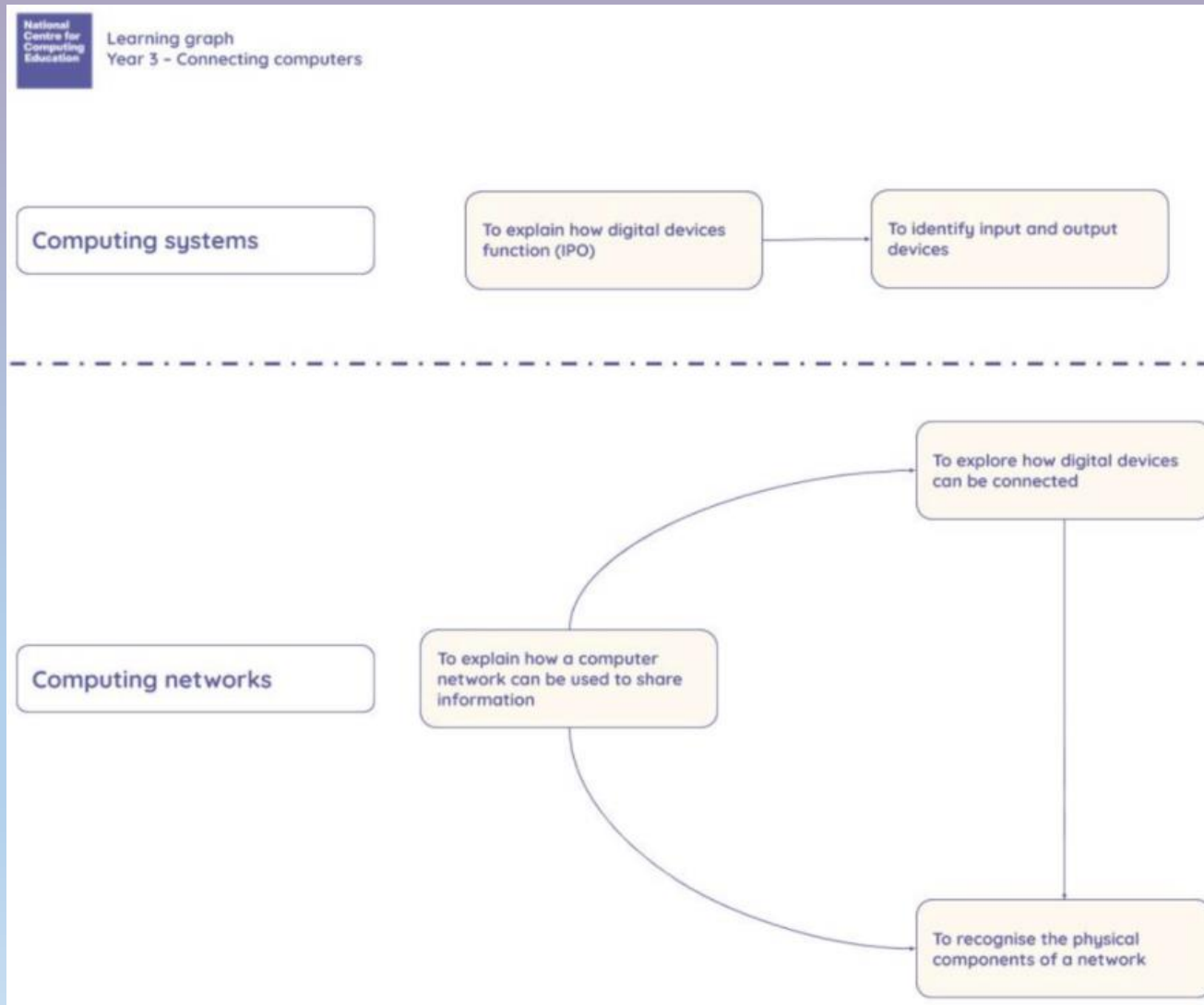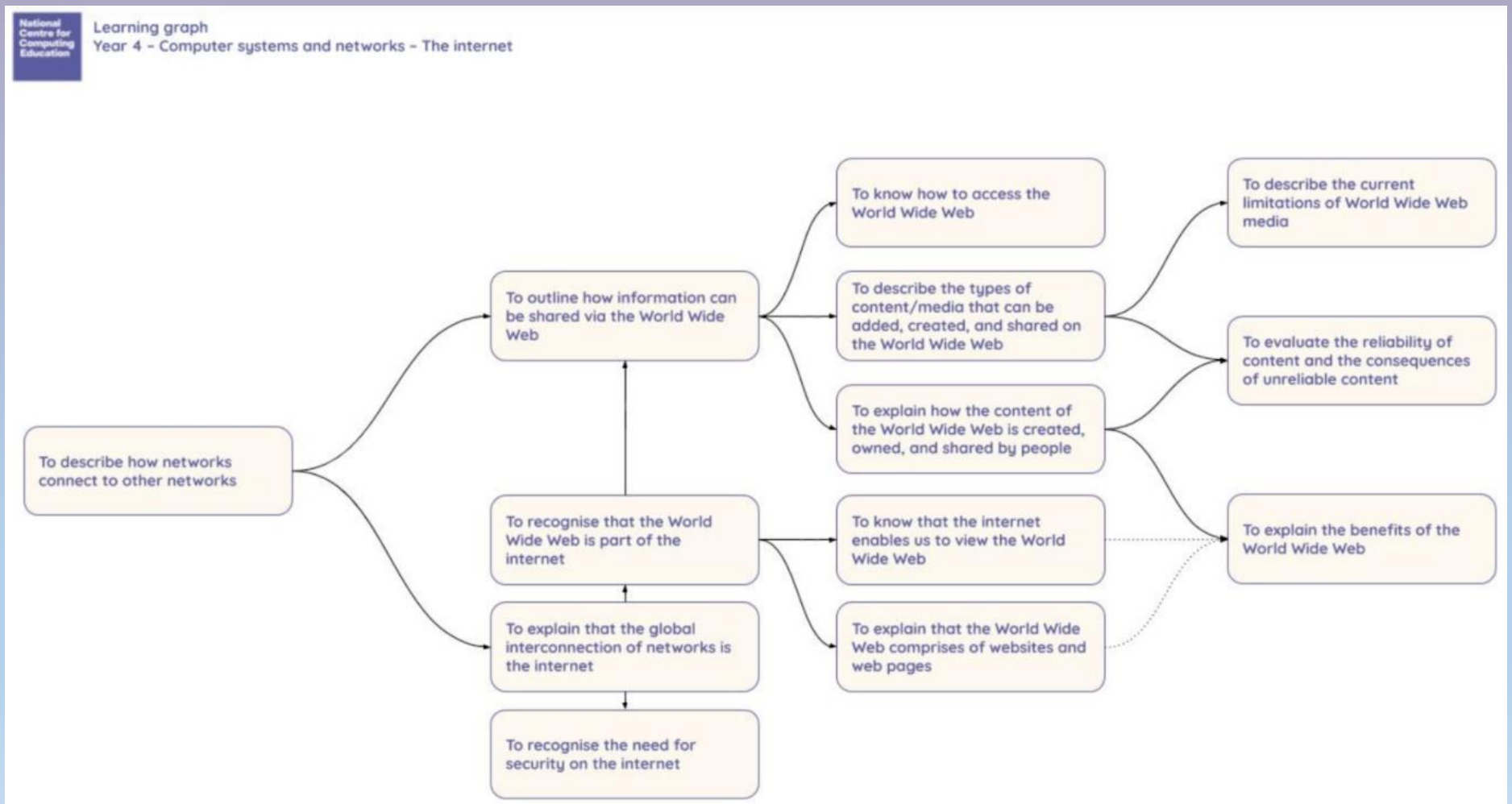|		Computer suite/ ipads?	Tech/ resources	Evidence	Assessment	NC links
Computing systems and Networks	The Internet	CS for some lessons	Chrome Music lab	Worksheets and screenshots/ saved websites	Summative assessment quiz	• Understand computer networks including the internet; how they can provide multiple 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 games	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

Year Four

Example of Learning Graph

Learning graph
Year 4 – Computer systems and networks – The internet

INTENT

- To describe how networks connect to other networks

- To outline how information can be shared via the World Wide Web
  - To know how to access the World Wide Web
  - To describe the types of content/media that can be added, created, and shared on the World Wide Web
    - To describe the current limitations of World Wide Web media
    - To evaluate the reliability of content and the consequences of unreliable content
  - To explain how the content of the World Wide Web is created, owned, and shared by people

- To recognise that the World Wide Web is part of the internet
  - To know that the internet enables us to view the World Wide Web
  - To explain the benefits of the World Wide Web

- To explain that the global interconnection of networks is the internet
  - To explain that the World Wide Web comprises of websites and web pages

- To recognise the need for security on the internet

Year Five
NCCE Curriculum Map

Barrow CEVC Primary School
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INTENT

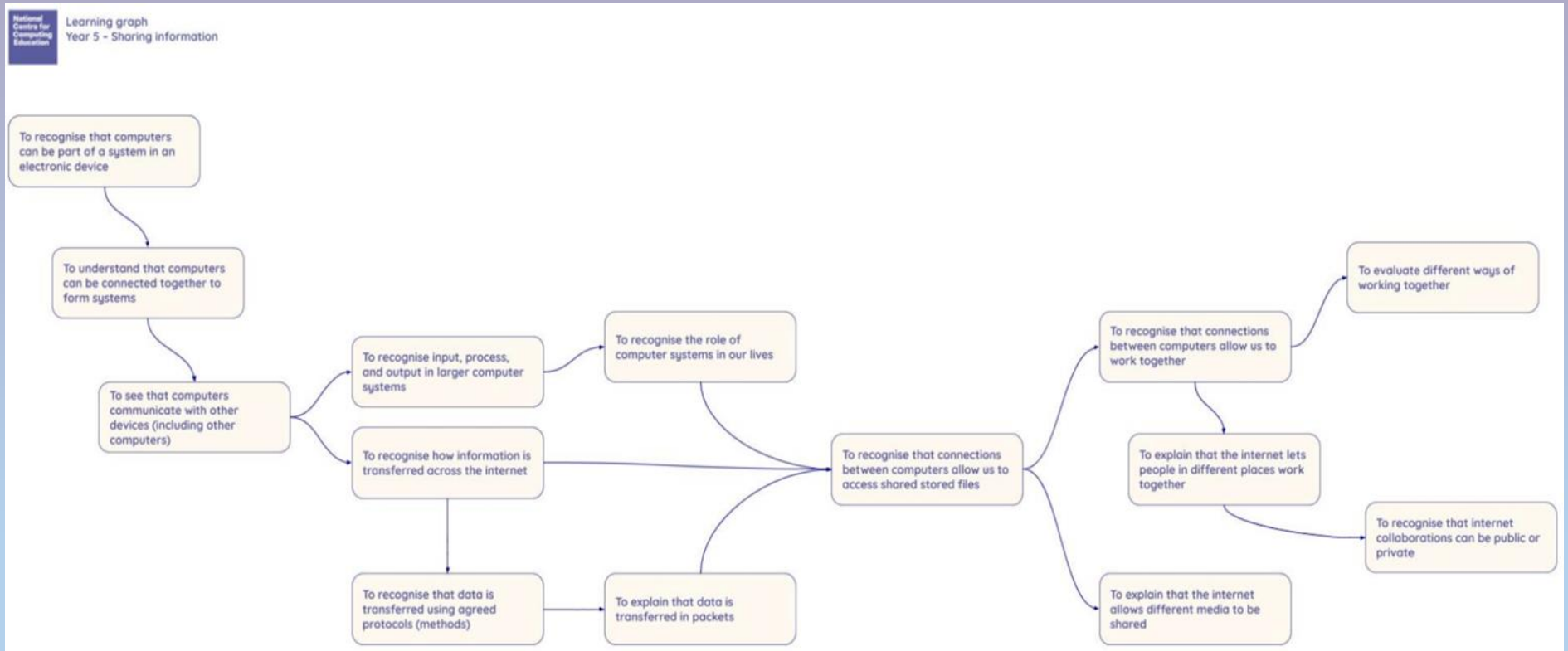| Term 1a	Computing systems and Networks	Sharing Information	CS some lessons	PP or google slides and Scratch	Slides and scratch project/ screenshots	Summative Assessment quiz	● Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve 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

Year Five

Example of Learning Graph

Learning graph
Year 5 - Sharing information

To recognise that computers can be part of a system in an electronic device

To understand that computers can be connected together to form systems

To see that computers communicate with other devices (including other computers)

To recognise input, process, and output in larger computer systems

To recognise the role of computer systems in our lives

To recognise how information is transferred across the internet

To recognise that connections between computers allow us to access shared stored files

To recognise that connections between computers allow us to work together

To evaluate different ways of working together

To explain that the internet lets people in different places work together

To recognise that internet collaborations can be public or private

To recognise that data is transferred using agreed protocols (methods)

To explain that data is transferred in packets

To explain that the internet allows different media to be shared

INTENT

Year Six
NCCE Curriculum Map

INTENT

			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

Year Six

Example of Learning Graph

INTENT