Bryn Offa CE Primary School

Computing Curriculum Map

Created – Autumn 2021

Bryn Offa Computing Curriculum Intent

The intent of the Bryn Offa Computing Curriculum is to develop the children's skills and knowledge so they become creative, confident and safe users of technology.

The computing curriculum is challenging and focusses on the key area of coding, starting with simple programmable toys in Reception and leading to programming hardware in Year 6. The areas of data handling and search technologies are built on progressively so the children move to secondary school with a broad experience of, and confidence with a range of hardware and software. The thread of safety runs through the computing curriculum so the children become safe users of the school technology and the technology they access at home.

As the children progress through the computing curriculum they will develop creativity, resilience, problem solving and critical thinking skills. They will be taught how to become independent learners and users of technology to become confident in their use of technology throughout the curriculum.

Key Vocabulary

Here is some of the key vocabulary the children should be using with confidence. Most of the vocabulary is not age specific, but is about using the correct word when appropriate.

Hardware – USB (Universal Serial Bus), sensor, monitor, memory, processor, webcam, tablet, lightening cable, Bluetooth, wireless, LAN (Local Area Network), Server, Hard Drive, Lumens, decibel, degrees centigrade, screen, sleep / standby,

Software – Install, start menu, desktop, task bar, all programs, icon, open, load, save

Keyboard and Mouse – Single click, double click, drag and drop

Coding – Sprite, collision detection, broadcast and receive, colour picker, Beebot, degrees, turn, co-ordinates, hide, show, variable, rotation, costume, backdrop, loop, repeat, function, block

Presenting – Uppercase, Lower case, highlight, centre, justify, bold, italic, keyboard shortcut, text, position, word art, text wrapping.

Graphics – Select, group, ungroup, JPEG, GIFF, BITMAP, cut, crop, resize, rotate, flip, colour picker, flood, clip art, stock images, layer, order, MP4, AVI,

Sound – Sensor, loop, wave, waveform, microphone, headphones, speakers, vibration, images, MP3, WAV, volume, pitch

Internet and Internet Safety – URL (uniform resource locator), website, hyperlink, refresh, history, back, forward, multi-media, streaming, copyright, downloading, attachment

Unit Skills

Each section has some of the Unit skills the children need to become confident with. These will need to be revisited often as these are skills that are easily forgotten and make a huge difference to the level of success the children will feel in each lesson.

E-Aware Log On Details

Website - https://www.eaware.co.uk/

Username – admin@brynoffa.shropshire.sch.uk

Password – BrynOffa1515

Computing National Curriculum

Early Years

Early learning goal – moving and handling Children show good control and co-ordination in large and small movements. They move confidently in a range of ways, safely negotiating space. They handle equipment and tools effectively, including pencils for writing.

Early learning goal – technology Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes.

Knows that information can be retrieved from computers. – 30 to 50 months

Completes a simple program on a computer. • Interacts with age-appropriate computer software. – 40 to 60+ months

National Curriculum - Purpose of study

A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems. The Unit of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

Key stage 1

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.

Key stage 2

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

Computing - Class 1 (Cycle A – Even Years)

Autumn

Main focus in the first term to be on the skills.

Internet Safety - Can be split between terms

E- Aware Unit – Friends : This unit aims to teach children how to recognise what a real friend is and how to recognise that someone who they communicate with online might not necessarily their 'friend'

E- Aware Unit – Positive Communication : This unit aims to teach children how to communicate online in a respectful and responsible manner. It introduces them to the concept of cyberbullying and what to do if someone is unkind to them online.

Additional safety (at appropriate times)

- When they are allowed to use computers in school and when not
- When they can use the internet in school and when not
- Keeping personal information safe

Early Learning Goal *- Interacts with age-appropriate computer software. – 40 to 60+ months*

Skills

- Effective use of touchscreen skills using single and multiple point commands.
- Confident use of Ipad for a limited range of software
- Controlling the cursor with mouse accurately.

National Curriculum *- 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.*

Spring

Coding

Roamer and Beebots

- Create verbal instructions for partner to follow (less able one at a time)
- Understand how a turn can be measured (Using a clock to help by using minutes to measure the turn)
- Control the distance roamer travels and how much it turns accurately by measuring and predicting how big the movements should be

More Able – Use the other features such as the laser to add into the sequence of commands

*Year 1 children - Course A - https://studio.code.org/s/coursea-2019

Skills

- Verbally give accurate instructions (such as take two steps forward, turn to the right)
- Start the coding hardware (Beebots or Roamers) and clear stored commands
- Enter and execute commands with a deliberate intention e.g. to get out of a maze

Early Learning Goal *- Completes a simple program on a computer. • Interacts with age-appropriate computer software. – 40 to 60+ months*

National Curriculum *- understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions*

National Curriculum *- create and debug simple programs*

National Curriculum *- use logical reasoning to predict the behaviour of simple programs*

Summer

Data Handling

- Teacher to use technology to create simple bar chart with pictures (software?)
- How the electronic registers work
- Use sensors to collect single data results
- Use sensors to collect two things at the same time e.g. light and temperature
- Explore the way sensors are used in the environment for controlling things

Early learning goal *– technology Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes.*

Skills

- Controlling the cursor with mouse accurately.
- Create a sequence of coding instructions on screen
- Recognise own mistakes and attempt to correct
- Effective use of touchscreen skills using single and multiple point commands.
- Be able to find the correct keys on a keyboard
- Confident use of Ipad for a limited range of software

Early Learning Goal *- Completes a simple program on a computer. • Interacts with age-appropriate computer software. – 40 to 60+ months*

Computing - Class 1 (Cycle B – Odd Years)

Autumn	Spring	Summer
Main focus in the first term to be on the Unit skills. **Internet Safety - Can be split between terms** E- Aware Unit – Friends : This unit aims to teach children how to recognise what a real friend is and how to recognise that someone who they communicate with online might not necessarily their 'friend' E- Aware Unit –Positive Communication : This unit aims to teach children how to communicate online in a respectful and responsible manner. It introduces them to the concept of cyberbullying and what to do if someone is unkind to them online. **Additional safety** - When they are allowed to use computers in school and when not - When they can use the internet in school and when not - Keeping personal information safe ***Early Learning Goal*** *- Interacts with age-appropriate computer software. – 40 to 60+ months* ***National Curriculum*** *- 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.*	***Coding*** *Roamer and Beebots* *- Understand how a turn can be measured (Using a clock to help by using minutes to measure the turn)* *- Create verbal instructions for partner to follow (less able one at a time)* *- Control the distance roamer travels and how much it turns accurately by measuring and predicting how big the movements should be* ***More Able*** *– Use the other features such as the laser to add into the sequence of commands* *Year 1 children should start to record the instructions on paper and compare the instructions with what they can see.* ***Skills*** *- Use a variety of websites for learning.* *Controlling the cursor with mouse accurately.* *- Effective use of touchscreen skills using single and multiple point commands.* *- Confident use of Ipad for a limited range of software* ***Early Learning Goal*** *- Interacts with age-appropriate computer software. – 40 to 60+ months* ***National Curriculum*** *- understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions* ***National Curriculum*** *- create and debug simple programs* ***National Curriculum*** *- use logical reasoning to predict the behaviour of simple programs*	***Data Handling*** *- Teacher to use technology to create simple bar chart with pictures (software?)* *- How the electronic registers work* *- Use sensors to collect single data results* *- Use sensors to collect two things at the same time e.g. light and temperature* *- Explore the way sensors are used in the environment for controlling things* *Year 1 children should start to take the data from the sensors into their books in a written form (simple chart or graph)* ***Early learning goal*** *– technology Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes.* ***Skills*** *- Use a variety of websites for learning.* *- Controlling the cursor with mouse accurately.* *- Recognise own mistakes and attempt to correct* *- Accurate use of drag and drop.* *- Effective use of touchscreen skills using single and multiple point commands.* *- Confident use of Ipad for a limited range of software* ***National Curriculum*** *- recognise common uses of information technology beyond school* ***National Curriculum*** *- use technology purposefully to create, organise, store, manipulate and retrieve digital content*

Computing - Class 2 (Cycle A – Even Years)

Autumn

Unit 1 - Internet Safety Can be split between terms

E- Aware Unit – Private Information - Start to recognise what personal information should be kept private. Understand that we should not share any private information online.

E- Aware Unit – Time Online - Start to understand how spending too much time online can be detrimental to your health Understand that it's important to have a healthy balance in life Start to understand concept of time and how much to spend online

E- Aware Unit – Digital Footprints - Start to understand what is meant by a 'digital footprint' Understand that everything they do online creates a digital footprint which is permanent Recap and explore what is appropriate to do and put online

Skills
- Use a variety of websites for learning and be confident with the way things are selected and how to navigate between pages
- Use a variety of appropriate software on the Ipads
- Use gesture controls on tablets

National Curriculum *- use technology safely and respectfully, keeping personal information private; identify where to go for help and support*

Unit 2 - Coding

Code.org Course 1
https://studio.code.org/s/course1

- Drag and drop
- Repeat instructions
- Sequencing instructions
- Simple loops

More Able – More able children may be able to go beyond Stage 11 to start using repeat loops

Skills

- Understand the coding instructions and be able to explain what simple code may do
- Create simple repeat loops
- Identify mistakes in code and correct
- Predict what will happen from reading code

Spring

Unit 1 - Data Handling (Cross Curricular - Science)

- Turn specific sensors on and off and select appropriate units of measure (Pictorial for younger children)
- Navigate the menu system in the sensors
- Create computer bar chart / pictogram?? From data they have collected in the real world (bar chart hand drawn)

Skills
- Turn the sensors on and use to gather data as long as the sensors set up in advance.
- Navigate menu system
- Create bar chart from data

National Curriculum - use technology purposefully to create, organise, store, manipulate and retrieve digital content

Unit 2 - Coding

Code.org Course 2
https://studio.code.org/s/course2

- Control sprite with forward and turn commands
- Control sprite and avoid obstacles which needs the children to predict the sequence of commands
- Control turns by selecting degree of turn
- Alter colours and set distances in pixels
- Create multistep operations to complete the task

More able - Use the 'Show Code' icon to show the more able children what the code looks like for the visual activities.

Skills

- Able to use mouse with a decent degree of accuracy.
- Understand the coding instructions and be able to explain what simple code may do.
- Identify mistakes in code and correct
- Predict what will happen from reading code
- Use the steps of movement and turn accurately

Summer

Unit 1 - Presenting (Cross Curricular - English)

- Look at examples of posters etc and discuss how they are made with computers and printers
- Identify common techniques used in publishing like the use of colour, size, bold etc
- Use cross curricular link to create the need for a poster for a particular audience
- Position text by using tools rather than space bar
- Change the way text looks to suit a purpose
- Use clip art to enhance work (involves searching and selecting images from clip art bank rather than open internet)

Skills

- Use simple formatting and colour to enhance work.
- Able to use mouse with a decent degree of accuracy.
- Able to use keyboard to use upper and lower case in addition to the symbols.

National Curriculum - use technology purposefully to create, organise, store, manipulate and retrieve digital content

Unit 2 - Internet and Communication (Cross Curricular – Topic)
Unit focussed on using the internet to find information and resources (could be images to include in own work)

- Compare use of internet with use of books for finding information
- Play some searching games like "Who can find cbeebies website?"
- Set a challenge like, who can find the best picture of a mountain
- Search for and select images based on criteria of quality and size.
- Create a collage of images on a document
- Set an image to have text wrapping

More able – Use additional tools of layering

Computing - Class 2 (Cycle A – Even Years)		
Autumn	**Spring**	**Summer**
National Curriculum *- create and debug simple programs* ***National Curriculum*** *- use logical reasoning to predict the behaviour of simple programs* .	***National Curriculum -*** *create and debug simple programs* ***National Curriculum*** *- use logical reasoning to predict the behaviour of simple programs*	***Skills*** *- Select appropriate and safe ways of searching on the internet* *- Identify appropriate images to copy from online* *- Use copy and paste effectively* *- Identify when resources can't be copied from the internet due to restrictions* *- Use text wrapping to make images easier to manipulate* *- Start to use enhancing tools such as borders and shadows* ***National Curriculum -*** *use technology purposefully to create, organise, store, manipulate and retrieve digital content* ***National Curriculum -*** use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.

Computing - Class 2 (Cycle B – Odd Years)

Autumn

Unit 1 - Internet Safety (Standalone) Can be split between terms

E- Aware Unit – Private Information - Start to recognise what personal information should be kept private. Understand that we should not share any private information online.

E- Aware Unit – Time Online - Start to understand how spending too much time online can be detrimental to your health Understand that it's important to have a healthy balance in life Start to understand concept of time and how much to spend online

National Curriculum - 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.

Unit 2 – Coding (Standalone)
Code.org Course A
https://studio.code.org/s/coursea-2019
https://curriculum.code.org/csf-19/coursea/
More Able – More able children may be able to go beyond Stage 11 to start using repeat loops

Skills

- Able to use mouse with a decent degree of accuracy.
- Understand the coding instructions and be able to explain what simple code may do.
- Use gesture controls on tablets

National Curriculum - create and debug simple programs

National Curriculum - use logical reasoning to predict the behaviour of simple programs

Spring

Unit 1 - Data Handling (Cross Curricular – Science)
- Turn specific sensors on and off and select appropriate units of measure (Pictorial for younger children)
- Create bar chart / pictogram?? From data they have collected in the real world
- Navigate the menu system in the sensors
- Use Ipads to take photo and then move to the computers so they can print a picture of their science experiments for their books
- Put photo of themselves into template create on word processor on the computers (highlight importance of not manipulating photographs of others)

Skills
- Turn the sensors on and use to gather data as long as the sensors set up in advance.
- Connect the sensors to the computers and move the data between sensor and computer via USB
- Move data between devices

National Curriculum - use technology purposefully to create, organise, store, manipulate and retrieve digital content

National Curriculum - recognise common uses of information technology beyond school

Unit 2 – Coding (Standalone)
Code.org Course B
https://studio.code.org/s/courseb-2019

- Create sequence of commands
- Creating repeating loops
- Alter colours and set distances in pixels
- Create multistep operations to complete the task

More able - Use the 'Show Code' icon to show the more able children what the code looks like for the visual activities.

Skills
- Able to use mouse with a decent degree of accuracy.
- Understand the coding instructions and be able to explain what simple code may do.
- Use gesture controls on tablets

Summer

Unit 1 – Presenting (Cross Curricular – Topic)

This unit can be delivered through the use of Word or Powerpoint.

- Identify features in books, posters etc that are used to attract the attention of the audience
- Position text by using tools rather than space bar to centre
- Change the way text looks to suit a purpose by selecting appropriate font
- Use clip art to enhance work from a clip art website or copy from appropriate web site
- Load and save work effectively (Core Skill)

More Able - Use a range of tools to change appearance of text and images to serve a purpose.

National Curriculum - use technology purposefully to create, organise, store, manipulate and retrieve digital content

Skills

- Use a variety of websites for learning and be confident with the way things are selected and how to navigate between pages.
- Able to use keyboard to use upper and lower case in addition to the symbols.
- Use simple formatting and colour to enhance work.
- Use a variety of appropriate software on the Ipads
- Use gesture controls on tablets

National Curriculum - use technology purposefully to create, organise, store, manipulate and retrieve digital content

National Curriculum - recognise common uses of information technology beyond school

Unit 2 - E- Aware Unit – Digital Footprints - Start to understand what is meant by a 'digital footprint' Understand that everything they do online creates a digital footprint which is permanent Recap and explore what is appropriate to do and put online

Computing - Class 2 (Cycle B – Odd Years)		
Autumn	**Spring**	**Summer**
	National Curriculum - create and debug simple programs **National Curriculum -** use logical reasoning to predict the behaviour of simple programs	**National Curriculum -** use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.

Computing - Class 3 (Cycle A – Even Years)

Autumn

Unit 1 - Internet Safety (Standalone short units) – Can be split between terms

E- Aware Unit – Photos : Understand that when a photo is uploaded to the internet, it is there forever Understand that you should ask a persons' permission before uploading a picture of them Recognise that sometimes pictures on the internet have been edited

E- Aware Unit – Fake News : Understand what is meant by the term 'Fake News' Start to Understand the reasons why Fake News is used in our world Start to develop strategies for recognising Fake News

E- Aware Unit – Time Online : Understand how spending too much time online can be detrimental to your health Understand that it's important to have a healthy balance in life Understand how to spread our time between activities effectively

E- Aware Unit – Friends : This unit aims to teach children how to create a strong password and what could happen if our passwords are used by another person.

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

Unit 2 – Coding (Standalone)

Code.org Course 3

https://studio.code.org/s/course3

- Control sprite with forward and turn commands
- Use repeat loop to shorten instructions
- Use conditional repeat loop
- Define functions and include within instructional loops

Skills

- Use web based coding program to control sprite and create loops

Spring

Unit 1 – Coding : Scratch! (Standalone)

- Use 'Create a story' tutorial
- Create simple story using one sprite and timing
- Make effective use of screen co-ordinates accurately
- Use printed and recorded speech
- Make use of multiple backgrounds and costume changes
- Use sensing blocks to create character interaction (may also be for more able)

More able – Find and download own background from image on internet (internet safety)

Skills

- Use drag and drop skills accurately to link commands together like a jigsaw
- Use co-ordinates accurately to position and move sprites
- Create code that is triggered by time or position
- Select appropriate background from options within software

National Curriculum - design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
National Curriculum - - use sequence, selection, and repetition in programs; work with variables and various forms of input and output
National Curriculum - 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

Unit 2 - Data Handling (Link to Science)

- Teacher to use technology to create simple bar chart with pictures (probably Excel) ***The way the data is orientated can make a difference so be careful***
- Create computer bar chart / pictogram?? From data they have collected in the real world
- Navigate the menu system in the sensors
- Use sensors (with pictograms) to collect data for a science investigation
- Use sensors to collect simple data that can be taken from sensor and written down.
-Compare creating a bar chart by hand and by taking data into the computer
- Turn specific sensors on and off and select appropriate units of measure
- Collect data, enter into spreadsheet and create graph

Summer

Unit 1 – Creative (Link to science and music)

- Record sound and play back through simple push button recorder
- Record sound on a standalone device that can record multiple sounds
- Compare standalone sound recorders
- Record sound through microphone connected to computer
- Take sound into sound processing software (Audacity) and use effects to manipulate sounds
- Save recorded sound and load back in again (Core Skill)

More Able – Find out what a MP3 and WAV file is and then teach this to the rest of the class

Skills

- Use sound recorders accurately
- Connect recording hardware (microphone) to the computer and get it working *Can be tricky!!!!!
- Record sounds on the computer and save accurately
- Find and load saved sound files

National Curriculum - 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

Unit 2 – Presenting (Cross Curricular - Topic)

- Explore the difference between using fonts and using word art
- Use text wrapping accurately to enable image manipulation
- Import an image from the internet and one from an ipad into their work
- Change the way text looks to suit a purpose
- Insert images and text with a specific layering
- Extract text and images from web sites to insert into own work

More Able – Use the online help to find and use a new tool no-one else has used. Then teach the class how to use it.

Skills

Computing - Class 3 (Cycle A – Even Years)

Autumn	Spring	Summer
- Find and correct errors in code - Be able to describe actions from reading a sequence of code **National Curriculum -** design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts **National Curriculum -** use sequence, selection, and repetition in programs; work with variables and various forms of input and output **National Curriculum -** use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	**Skills** - Use single point and multiple point commands on a touchscreen. - Use the sensors accurately when used as a standalone device. **National Curriculum -** design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts **National Curriculum -** - use sequence, selection, and repetition in programs; work with variables and various forms of input and output **National Curriculum -** 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 keyboard and mouse effectively - Use single point and multiple point commands on a touchscreen. - Use the basic formatting tools within presentation software such as word and Powerpoint - Use the sensors accurately when used as a standalone device. - Make effective use of formatting and colour to add visual impact to work. - Be able to research a topic online effectively without getting overwhelmed with the amount of information. **National Curriculum -** 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

Computing - Class 3 (Cycle B – Odd Years)

Autumn

Unit 1 - Internet Safety (Standalone short units) – Can be split between terms

E- Aware Unit – Things are not always as they seem:
Understand that what we see online is not always what we think it is Understand that it is easy for people to lie online Understand that it is possible to be tricked into doing things online.

E- Aware Unit – Cyberbullying : Identify the meaning of the word 'cyberbullying' Identify the online dangers and understand ways we can stay safe online Identify cyberbullying and understand its' consequences Promote active and open discussions to promote an openness to talk about cyberbullying.

E- Aware Unit – Passwords : This unit aims to teach children how to create a strong password and what could happen if our passwords are used by another person.

Additional safety

- How to report things in school and if they needed to report things at home
- Difference between real world and online work
- People pretending to be who they aren't
- Keeping personal information safe

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

Unit 2 - Coding
Code.org Course D
https://studio.code.org/s/coursed-2019
https://curriculum.code.org/csf-19/coursed/

- Sequencing
- Creating repeat loops
- Conditionals
- Binary

More able - Use the 'Show Code' icon to show the more able children what the code looks like for the visual activities.

Spring

Unit 1 – Coding Scratch! (Create an animation where sprites react to each other and their background)

*Unit is first exposure to Scratch so can be repeated each year with adaptation for children who may have done Scratch previously (check with Paul on this)

- Select and move character
- Adding sound to script
- Add background and edit sprite
- Record own sounds to use instead of built in sounds

More able could attempt to find and download free sound clips to use (Very tricky)

National Curriculum - design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
National Curriculum - use sequence, selection, and repetition in programs; work with variables and various forms of input and output
National Curriculum - use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs

Unit 2 - Data Handling (Link to Science with a little more focus on spreadsheets than Cycle A)

- Teacher to use technology to create simple bar chart with pictures (link to science)
- Create computer bar chart / pictogram?? From data they have collected in the real world
- Use sensors (with pictograms) to collect data for a science investigation.
- Turn specific sensors on and off and select appropriate units of measure
- Collect data, enter into spreadsheet and create graph
- Explore the different types of graph that can be created iin Excel

Skills

Summer

Unit 1 - Creative (Cross Curricular linked to Art)

- Use MS Word to create regular shapes, name them and print (must use text wrapping)
- Reload previous work and add colour and texture to the shapes. Print again
- Use the different tools that are in the Drawing Tools Tab to change the look of the shape
- Produce a piece of art by using geometric and repeating shapes.

More Able – Make use of layering and then teach to other children if possible.

Skills
- Use text wrapping to make movement of shape possible
- Use grouping to create 'stamp'

Unit 2 - Research and Presenting (Cross Curricular – Topic)

- Explore difference between searching a particular web site compared to searching the whole internet.
- Effective search techniques to find examples of the sort of work you are asking the children to do.
- Look at the information in the URL to make generalisations about websites e.g .com is a company while .org is likely to be a charitable organisation

Skills

- Use effective search skills
- Search effectively and safely
- Be able to research a topic online effectively without getting overwhelmed with the amount of information.

National Curriculum - use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content

Computing - Class 3 (Cycle B – Odd Years)

Autumn	Spring	Summer
Skills - Create accurate code and be able to identify own mistakes - Create repeat loops - Create conditional code **National Curriculum -** design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts **National Curriculum -** use sequence, selection, and repetition in programs; work with variables and various forms of input and output **National Curriculum -** use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	- Navigate the menu system in the sensors - Use the sensors accurately when used as a standalone device. - Enter data into spreadsheet accurately so it is easily understood - **National Curriculum -** 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	

Computing - Class 4 (Cycle A – Even Years)

Autumn

Unit 1 – Internet Safety (Standalone short units) – Can be split between terms

E- Aware Unit – Passwords : Understand the importance of keeping passwords safe Understand the importance of creating strong passwords Understand the consequences of sharing a password or leaving it lying around

E- Aware Unit – Gaming : Understand the importance playing games which are age appropriate Understand the risks involved with in-App and gaming purchases Understand that people we meet online might not always be who they say they are

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

Unit 2 – Coding - Scratch! – Game Design (Standalone Unit)

- Follow online tutorial for game design
- Complete series of tutorials for movement and collision detection
- Use an alternative method of moving sprite
- Use Random function to create object in game that involves random movement
- Evaluate own game and the games of others
- **More Able: Create scoring for the game**

Skills

- Follow online tutorials
- Code movement of sprite from arrow keys
- Be able to debug own coding on Scratch!
- Use conditional sensing on Scratch for collision detection

National Curriculum - design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
National Curriculum - use sequence, selection, and repetition in programs; work with variables and various forms of input and output
National Curriculum - use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs

Spring

Unit 1 - Data Handling (Cross Curricular link to Science)

- Use sensors effectively when used as a standalone device and when connected live to the computer
- Set the sensor up to take readings when disconnected from the computer
- Set the interval and duration of a data set
- Collect data over an extended period, import into spreadsheet and create graph of results

More Able : Conduct experiment over multiple days in school

Skills

- Set up sensors and units of measure
- Collect data manually from sensor and when connected to the software.
- Import large data set into sensor software and into spreadsheet to compare how easy each is to use.

National Curriculum - 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

Unit 2 – Creative (Cross Curricular link to Science)

- Record sounds using Audacity software
- Edit sounds on Audacity to improve sound recording by removing mistakes
- Use the sound tools to manipulate a sound recording E.g. make it louder or go backwards
- Compare sound waves to actual sounds (link to science)
- Use search tools to find, download and use free sound clips

Skills

- Use the sensors accurately when connected to the computer and when used remotely
- Be able to use online tools to research effectively

National Curriculum - 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

Summer

Unit 1 – Creative (Cross Curricular link to music)

- Drum loops – Use a variety of software to create drum loops from Youtube tutorials
- Compose a piece of music by using LMMS
- Find simple drum tutorials online and use them to improve own drum loops
- Use Garage band on Ipads to create drum loops
- Draw comparisons between tablet and computer software

Skills

- Save and load work
- Search online to find appropriate tutorials and make use of them to improve work
- Compare the use of music software on computer and tablet

National Curriculum - use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
National Curriculum - 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

Unit 2 - Internet and Communication (Standalone unit but could be linked to topic)

- Navigating around the email software and which tools to use
- How to access from home and what the rules for email are.
- Dangers of email and information sharing (link to internet safety)
- Emailing to multiple recipients (CC and BCC)
- Emailing attachments and the security concerns regarding this.
- Spam and the problems it causes

Skills

- Understand the dangers online and how to keep themselves safe
- Be able to use email tools effectively such as CC or BCC or adding attachments
- Blocking and reporting emails
- Security and the problems that can be created by email

Computing - Class 4 (Cycle A – Even Years)		
Autumn	**Spring**	**Summer**
		National Curriculum - 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 **National Curriculum -** 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

Computing - Class 4 (Cycle B – Odd Years)

Autumn

Unit 1 - Internet Safety (Standalone short units) – Can be split between terms

E- Aware Unit – Cyberbullying : Identify cyberbullying and understand its' consequences Promote active and open discussions to promote an openness to talk about cyberbullying Understand the importance of being an 'Upstander', not a 'Bystander'

E- Aware Unit – Time Online : Understand how spending too much time online can be detrimental to your health Understand that it's important to have a healthy balance in life Debate the pros and cons of spending time in front of a screen

Unit 2 - Coding

Scratch! (Creating 2D Shapes – Link to Maths)

- Drawing squares and rectangles with pen tool and clearing screen to reset
- Create an equilateral triangle and some other regular 2D shapes
- Repeated function to create regular shape
- Complex picture using script
- More Able: Scalene triangles

Skills

- Understand the dangers online and how to keep themselves safe
- Saving, finding and opening their own work across multiple software
- Make effective use of technology to improve other curriculum areas such as science
- Be able to debug own coding on Scratch!
- Use the sensors accurately when connected to the computer and when used remotely
- Be able to use online tools to research effectively

National Curriculum - design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
National Curriculum - use sequence, selection, and repetition in programs; work with variables and various forms of input and output

Spring

Unit 1 - Data Handling

- Turn specific sensors on and off and select appropriate units of measure
- Collect data through live connection and by recording data
- Create a graph from within the sensor software
- Collect data, enter into spreadsheet and create graph
- Use local database to interrogate and answer questions
- More Able: Compare the way that different types of data are more suited to different graph types.

Unit 2 - Creative

- Watch some online tutorials to determine the conventions used
- Develop the skills of recording and editing video
- Produce video tutorial and review the work of classmates

Skills

- Understand the dangers online and how to keep themselves safe
- Saving, finding and opening their own work across multiple software
- Make effective use of technology to improve other curriculum areas such as science
- Be able to debug own coding on Scratch!
- Use the sensors accurately when connected to the computer and when used remotely
- Be able to use online tools to research effectively

National Curriculum - 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
National Curriculum - use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content

Summer

Unit 1 - Presenting

- Make use of all main formatting tools in Word, Powerpoint and Publisher
- Use layering effectively for text and images
- Remove background and alter images for effect

Unit 2 - Internet and Communication

- Effective and safe use of email
- Dangers of email and information sharing (link to internet safety)
- Emailing to multiple recipients
- Use of CC and BCC
- Emailing attachments and the security concerns regarding this.

Skills

- Understand the dangers online and how to keep themselves safe
- Saving, finding and opening their own work across multiple software
- Make effective use of technology to improve other curriculum areas such as science
- Be able to debug own coding on Scratch!
- Use the sensors accurately when connected to the computer and when used remotely
- Be able to use online tools to research effectively

National Curriculum - 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
National Curriculum - 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

Computing - Class 4 (Cycle B – Odd Years)		
Autumn	Spring	Summer
National Curriculum - use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs **National Curriculum -** use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.		

Computing - Class 5 (Cycle A – Even Years)

Autumn

Unit 1 - Internet Safety (Standalone short units) – Can be split between terms

E- Aware Unit – Naked Images : Understand the laws relating to sending naked pictures Understand what to do if they are feeling pressured into sending a naked picture Understand the dangers and consequences of sending a naked picture

E- Aware Unit – Fake News : Understand what is meant by the term 'Fake News' Develop strategies to help recognise when a news story might be fake. Start to understand why certain people or groups create fake news.

Skills

- Understand the dangers online and how to keep themselves safe

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

Unit 2 – Coding (Standalone Unnt)

Scratch! – Game Design

- Follow online tutorial for game design (on Scratch! Website)
- Use an alternative method of moving sprite
- Use Random function to create object in game that involves random movement
- Create scoring and timing within game
- Add an automatic element to the game, such as 'gravity'
- Evaluate own game and the games of others
- **More Able: Use the random tool to create a scrolling background for the game**

Skills

- Saving, finding and opening their own work across multiple software
- Follow an online tutorial

> **National Curriculum -** design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts

Spring

Unit 1 - Data Handling (Cross Curricular link to Science)
- Use sensors effectively when used as a standalone device and when connected live to the computer
- Set the sensor up to take readings when disconnected from the computer
- Set the interval and duration of a data set
- Collect data over an extended period, import into spreadsheet and create graph of results
- Use of formula in spreadsheet (If then commands)
- Use online database to navigate and interrogate
- Use and create branching database to for identification (link to science classification keys)
- **More Able : Set up and conduct an experiment that uses more than one factor to determine if there is a link between them E.g. light and heat**

Skills
- Saving, finding and opening their own work across multiple software
- Set up and use hardware appropriately

> **National Curriculum -** 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

Unit 2 - Researching and Presenting (Cross curricular link to Topic)
- Research how computers are used to produce digital content such as presentations and posters.
- Research a field of interest – developing research techniques
- Make use of all main formatting tools in Word, Powerpoint and Publisher
- Use layering effectively for text and images
- Remove background and alter images for effect

Skills
- Saving, finding and opening their own work across multiple software
- Use correct formatting tools in presentation software
- Deal with common error messages themselves.
- Be able to use online tools to research effectively

> **National Curriculum -** understand computer networks including the internet; how they can provide multiple services, such as the world wide

Summer

Unit 1 – Coding (Standalone Unit)
Scratch – Quiz

- Follow online tutorial to create the formula for the quiz
- Make use of background swap to match questions
- Create scoring for the game
- Create a Who wants to be a millionaire type multiple choice quiz.
- **More Able – Work out how to make the answers on a timer.**

> **National Curriculum -** design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
> **National Curriculum -** use sequence, selection, and repetition in programs; work with variables and various forms of input and output
> **National Curriculum -** use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs

Unit 2 - Internet and Communication (Standalone Unit)
- Effective and safe use of email
- Dangers of email and information sharing
- Blogs and social media

Skills
- Understand the dangers online and how to keep themselves safe
- Saving, finding and opening their own work across multiple software
- Deal with common error messages themselves.
- Follow an online tutorial
- Be able to use online tools to research effectively

> **National Curriculum -** 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

Computing - Class 5 (Cycle A – Even Years)

Autumn	Spring	Summer
National Curriculum - use sequence, selection, and repetition in programs; work with variables and various forms of input and output **National Curriculum -** use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	web; and the opportunities they offer for communication and collaboration **National Curriculum -** use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content	

Computing - Class 5 (Cycle B – Odd Years)

Autumn

Unit 1 - Internet Safety (Standalone short units) – Can be split between terms

E- Aware Unit – Naked images : Understand the laws relating to sending naked pictures Understand what to do if they are feeling pressured into sending a naked picture Understand the dangers and consequences of sending a naked picture

E- Aware Unit – E- Aware Unit – Cyberbullying : Identify cyberbullying and understand its' consequences Promote active and open discussions to promote an openness to talk about cyberbullying Understand the importance of being an 'Upstander', not a 'Bystander'

Unit 2 - Coding (Standalone Unit)

Scratch! (Creating 2D Shapes – Link to Maths)

- Drawing squares and rectangles with pen tool and clearing screen to reset
- Create an equilateral triangle and some other regular 2D shapes
- Repeated function to create regular shape
- Complex picture using script
- **More Able: Attempt to use a formula within the coding for regular geometric shapes**

Skills

- Understand the dangers online and how to keep themselves safe
- Saving, finding and opening their own work across multiple software
- Use correct formatting tools in presentation software
- Deal with common error messages themselves.
- Set up and use hardware appropriately
- Follow an online tutorial
- Be able to use online tools to research effectively

National Curriculum - use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.
National Curriculum - design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts

Spring

Unit 1 - Data Handling (Cross curricular link to science and maths)

- Manipulate data in a spreadsheet to create graphs and perform calculations
Turn specific sensors on and off and select appropriate units of measure
- Collect data through live connection and by recording data
- Create a graph from within the sensor software
- Collect data, enter into spreadsheet and create graph
- Use local database to interrogate and answer questions
- More Able: Compare the way that different types of data are more suited to different graph types.

National Curriculum - 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

Unit 1 - Creative (cross curricular link to music)

- Drum loops
- Compose a piece of music by using LMMS
- How speakers work (link to science)
- More Able : Record sounds from proper musical instruments and compare sound waves to voice sounds

Skills

- Understand the dangers online and how to keep themselves safe
- Saving, finding and opening their own work across multiple software
- Use correct formatting tools in presentation software
- Deal with common error messages themselves.
- Set up and use hardware appropriately
- Follow an online tutorial
- Be able to use online tools to research effectively

National Curriculum - design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
National Curriculum - use sequence, selection, and repetition in programs; work with variables and various forms of input and output

Summer

Unit 1 - Presenting (Cross curricular link to topic and English)

- Decide on type of document to publish and look at real published examples
- Match what you can see on the published examples with tools in Word
- What can be done in school and what can't?
- Design publication on paper before doing on computer
- Make use of all main formatting tools in Word, Powerpoint and Publisher
- Use layering effectively for text and images
- Remove background and alter images for effect

Skills

- Saving, finding and opening their own work across multiple software
- Use correct formatting tools in presentation software
- Deal with common error messages themselves.

Unit 2 - Internet and Communication

- Effective and safe use of email
- Conventions of email
- Use of Skype within school
- Blogs and social media – How to use safely (the records they leave behind)
- Research into people who have had careers ruined etc through inappropriate social media posts

Skills

- Understand the dangers online and how to keep themselves safe
- Saving, finding and opening their own work across multiple software
- Use correct formatting tools in presentation software
- Deal with common error messages themselves.
- Set up and use hardware appropriately
- Follow an online tutorial

Computing - Class 5 (Cycle B – Odd Years)		
Autumn	Spring	Summer
National Curriculum - use sequence, selection, and repetition in programs; work with variables and various forms of input and output **National Curriculum -** use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs		- Be able to use online tools to research effectively **National Curriculum -** 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