

Computing – Progression document at Brabin’s Endowed



EYFS

Using the new EYFS framework 2021 these are keys skills they will learn through the use of technology – explore how things work, 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' and be confident to try new activities using a range of resources Children will be taught half termly unit of Online Safety using the Education for a Connected World. Expressive Arts and Design, PSED, Physical Development and understanding the world are four of the seven key areas of learning and development in the Early Years Foundation Stage (EYFS). Development Matters (2020) identifies the following skills:

PSED – ELG – Be confident to try new activities and show independence, resilience and perseverance in the face of challenge. Explain reasons for rule, know right from wrong and try to behave accordingly.

Expressive arts and design – ELG – Safely use and explore variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.

KS1 - Pupils will 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

Cycle A Year 1 and 2

Technology around us

Moving a robot

Programming animations

Information technology around us

Algorithms

Programming quizzes

Cycle B - Year 1 and 2

Digital painting

Digital photography

Grouping data

Digital writing

Pictograms

Digital music

KS2 - Pupils will 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

Cycle A - Year 3 and 4

Connecting computers

The internet

Sequencing sounds

Events and actions in program

Branching databases

Data logging

Cycle A - Year 5 and 6

Video production/ editing

Flat file databases

Vector drawing

Selecting in physical computing (crumble)

Selection quizzes

3D modelling

Cycle B Year 3 and 4

Stop frame animations

Desktop publishing

Audio production

Repetition in shapes

Photo editing

Repetition in games

Cycle B Year 5 and 6

Systems and searching

Communication and collaboration

Web creation

Spreadsheets

Variable in games

Sensing – micro bit

Range and depth of Knowledge and Skills

- **Computers/smart board**
- Manipulating objects on a screen
- Using an interactive smart board, computer
- Understand that generally one person uses can change things at once and they have to wait their turn.
- **Understanding instructions**
- Children follow instructions
- Record what they have done
- Recall what they what they have done
- **Programmable toy**
- How do they move?
- Children control their movement
- Children move them forwards, backwards, left and right
- Can they count how many times the bee bot will need to move?
- **Messages – record and listen**
- Model how to use talking pegs
- Introduce vocabulary play, record and off
- Children explore recording their ideas in the continuous provision
- Share their learning
- **Taking digital photographs**
- Can children talk about things that are special to them?
- Model how to take photographs
- Model how look at their photograph.
- Reflect on their learning
- **Recording, listening and making music**
- Retell their favourite story
- Model how to use audacity
- Can the children record their own ideas using the app

Cycle A – KS1

- **Technology around us - Computing systems and networks**
- To identify technology • To identify a computer and its main parts • To use a mouse in different ways • To use a keyboard to type on a computer • To use the keyboard to edit text • To create rules for using technology responsibly.
- **Moving a robot – Programming**
- To explain what a given command will do • To act out a given word • To combine forwards and backwards commands to make a sequence • To combine four direction commands to make sequences • To plan a simple program • To find more than one solution to a problem.
- **Programming animations - Programming**
- To choose a command for a given purpose • To show that a series of commands can be joined together • To identify the effect of changing a value • To explain that each sprite has its own instructions • To design the parts of a project • To use my algorithm to create a program.
- **Information technology around us**
- **Computing systems and networks**
- To recognise the uses and features of information technology • To identify the uses of information technology in the school • To identify information technology beyond school • To explain how information technology helps us • To explain how to use information technology safely.
- **Algorithms - Programming**
- To describe a series of instructions as a sequence • To explain what happens when we change the order of instructions • To use logical reasoning to predict the outcome of a program • To explain that programming projects can have code and artwork • To design an algorithm • To create and debug a program that I have written.
- **Programming quizzes- Programming**
- To explain that a sequence of commands has a start • To explain that a sequence of commands has an outcome • To create a program using a given design • To change a given design • To create a program using my own design • To decide how my project can be improved.

Cycle A Year 3 and 4

- **Connecting computers- Computing systems and networks**
- To explain how digital devices function • To identify input and output devices • To recognise how digital devices can change the way we work • 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.
- **The internet- Computing systems and networks**
- To describe how networks physically connect to other networks • To recognise how networked devices make up the internet • To outline how websites can be shared via the World Wide Web (WWW) • To describe how content can be added and accessed on the World Wide Web (WWW) • To recognise how the content of the WWW is created by people • To evaluate the consequences of unreliable content.
- **Sequencing sounds- Programming**
- To explore a new programming environment • To identify that commands have an outcome • To explain that a program has a start • To recognise that a sequence of commands can have an order • To change the appearance of my project • To create a project from a task description.
- **Events and actions in program - Programming**
- To explain how a sprite moves in an existing project • To create a program to move a sprite in four directions • To adapt a program to a new context • To develop my program by adding features • To identify and fix bugs in a program • To design and create a maze-based challenge.
- **Branching databases- Data and information**
- To create questions with yes/no answers • To identify the attributes needed to collect data about an object • To create a branching database • To explain why it is helpful for a database to be well structured • To plan the structure of a branching database • To independently create an identification tool.
- **Data logging- Data and information**
- To explain that data gathered over time can be used to answer questions • To use a digital device to collect data automatically • To explain that a data logger collects 'data points' from sensors over time • To recognise how a computer can help us analyse data • To identify the data needed to answer questions • To use data from sensors to answer questions.

Cycle A – Year 5 and 6

- **Video production/ editing– Creating media**
- To explain what makes a video effective • To identify digital devices that can record video • To capture video using a range of techniques • To create a storyboard • To identify that video can be improved through reshooting and editing • To consider the impact of the choices made when making and sharing a video.
- **Flat file databases Data and information**
- To use a form to record information • To compare paper and computer-based databases • To outline how you can answer questions by grouping and then sorting data • To explain that tools can be used to select specific data • To explain that computer programs can be used to compare data visually • To use a real-world database to answer questions.
- **Vector drawing– Creating media**
- To identify that drawing tools can be used to produce different outcomes • To create a vector drawing by combining shapes • To use tools to achieve a desired effect • To recognise that vector drawings consist of layers • To group objects to make them easier to work with • To apply what I have learned about vector drawings.
- **Selecting in physical computing (crumble) - Programming**
- To control a simple circuit connected to a computer • To write a program that includes count controlled loops • To explain that a loop can stop when a condition is met • To explain that a loop can be used to repeatedly check whether a condition has been met • To design a physical project that includes selection • To create a program that controls a physical computing project.
- **Selection quizzes- Programming**
- To explain how selection is used in computer programs • To relate that a conditional statement connects a condition to an outcome • To explain how selection directs the flow of a program • To design a program which uses selection • To create a program which uses selection • To evaluate my program.
- **3D modelling– Creating media**
- To recognise that you can work in three dimensions on a computer • To identify that digital 3D objects can be modified • To recognise that objects can be combined in a 3D model • To create a 3D model for a given purpose • To plan my own 3D model • To create my own digital 3D model.

Cycle B KS1

Digital painting – Creating media

To describe what different freehand tools do • To use the shape tool and the line tools • To make careful choices when painting a digital picture • To explain why I chose the tools I used • To use a computer on my own to paint a picture • To compare painting a picture on a computer and on paper.

Digital photography– Creating media

To use a digital device to take a photograph • To make choices when taking a photograph • To describe what makes a good photograph • To decide how photographs can be improved • To use tools to change an image To recognise that photos can be changed.

Grouping data- Data and information

To label objects • To identify that objects can be counted • To describe objects in different ways • To count objects with the same properties • To compare groups of objects • To answer questions about groups of objects.

Digital writing – Creating media

To use a computer to write • To add and remove text on a computer • To identify that the look of text can be changed on a computer • To make careful choices when changing text • To explain why I used the tools that I chose • To compare typing on a computer to writing on paper.

Pictograms - Data and information

To recognise that we can count and compare objects using tally charts • To recognise that objects can be represented as pictures • To create a pictogram • To select objects by attribute and make comparisons • To recognise that people can be described by attributes • To explain that we can present information using a computer

Digital music– Creating media

• To say how music can make us feel • To identify that there are patterns in music • To experiment with sound using a computer • To use a computer to create a musical pattern • To create music for a purpose • To review and refine our computer work.

Cycle B Year 3 and 4

Stop frame animations– Creating media

To explain that animation is a sequence of drawings or photographs • To relate animated movement with a sequence of images • To plan an animation • To identify the need to work consistently and carefully • To review and improve an animation • To evaluate the impact of adding other media to an animation.

Desktop publishing– Creating media

To recognise how text and images convey information • To recognise that text and layout can be edited • To choose appropriate page settings • To add content to a desktop publishing publication • To consider how different layouts can suit different purposes • To consider the benefits of desktop publishing.

Audio production– Creating media

To identify that sound can be recorded • To explain that audio recordings can be edited • To recognise the different parts of creating a podcast project • To apply audio editing skills independently • To combine audio to enhance my podcast project To evaluate the effective use of audio.

Repetition in shapes- Programming

To develop the use of count-controlled loops in a different programming environment • To explain that in programming there are infinite loops and count controlled loops • To develop a design that includes two or more loops which run at the same time • To modify an infinite loop in a given program • To design a project that includes repetition • To create a project that includes repetition.

Photo editing– Creating media

To explain that the composition of digital images can be changed • To explain that colours can be changed in digital images • To explain how cloning can be used in photo editing • To explain that images can be combined • To combine images for a purpose • To evaluate how changes can improve an image.

Repetition in games- Programming

To develop the use of count-controlled loops in a different programming environment • To explain that in programming there are infinite loops and count controlled loops • To develop a design that includes two or more loops which run at the same time • To modify an infinite loop in a given program • To design a project that includes repetition • To create a project that includes repetition.

Cycle B Year 5 and 6

Systems and searching- Computing systems and networks

To explain that computers can be connected together to form systems • To recognise the role of computer systems in our lives • To experiment with search engines • To describe how search engines select results • To explain how search results are ranked • To recognise why the order of results is important, and to whom.

Communication and collaboration

Computing systems and networks

To explain the importance of internet addresses • To recognise how data is transferred across the internet • To explain how sharing information online can help people to work together • To evaluate different ways of working together online • To recognise how we communicate using technology • To evaluate different methods of online communication.

Web creation– Creating media

To review an existing website and consider its structure • To plan the features of a web page • To consider the ownership and use of images (copyright) • To recognise the need to preview pages • To outline the need for a navigation path To recognise the implications of linking to content owned by other people.

Spreadsheets- Data and information

To create a data set in a spreadsheet • To build a data set in a spreadsheet • To explain that formulas can be used to produce calculated data • To apply formulas to data • To create a spreadsheet to plan an event • To choose suitable ways to present data.

Variable in games- Programming

To define a 'variable' as something that is changeable • To explain why a variable is used in a program • To choose how to improve a game by using variables • To design a project that builds on a given example • To use my design to create a project • To evaluate my project.

Sensing – micro bit

Computing systems and networks

To explain the importance of internet addresses • To recognise how data is transferred across the internet • To explain how sharing information online can help people to work together • To evaluate different ways of working together online • To recognise how we communicate using technology • To evaluate different methods of online communication.

Vocabulary

EYFS vocabulary

- Technology
 - Program
- I pads, laptops, computers, I pods, Bee bots
 - Record, pause, play, stop
- Left, right, forwards, backwards
- Keyboard, type, enter, backspace
 - Internet, safety
 - Problem solving
 - Mouse, camera
 - Paint, draw, erase
 - Equipment
 - Control

Key Stage 1 – Key Vocabulary

- Algorithm
- Attribute
- Code
- Code snippet
- Command
- Computer
- Data
- Debugging
- Information
- Information technology
 - Object
- Property attribute
 - Technology
- Run - execute

Year 3 and 4 – Key Vocabulary

- Algorithm
- Attribute
- Code
- Code snippet
- Command
- Computer
- Computer network
- Computer system
- Condition
- Condition controlled loop
- Count controlled loop
 - Data
 - Data set
 - Debugging
 - Decompose
 - Digital device
 - Domain name
 - Execute – run
 - Hardware
- HTML hypertext markup language
 - Hyperlink
 - Infinite loop
 - Information
 - Information technology
 - Input/input device
 - Internet
 - Loop
- Loop condition/count controlled
 - Loop infinite
 - Network
 - Object
- Output/output device
 - Procedure
 - Process
 - Program
 - Repetition
 - Router
 - Run – execute
 - Selection
 - Server
 - Software
 - Stored data
 - Subroutine
 - Switch
 - Technology
- URL uniform resources locator
 - Variable
 - Web
- Web address/web browser/web page
 - Website
 - WIFI/ WWW world wide web
 - WAP -wireless access point

Year 5 and 6 – Key Vocabulary

- Algorithm
- Attribute
- Code
- Code snippet
- Command
- Computer
- Computer network
- Computer system
- Condition
- Condition controlled loop
- Count controlled loop
 - Data
 - Data set
 - Debugging
 - Decompose
 - Digital device
 - Domain name
 - Execute – run
 - Hardware
- HTML hypertext markup language
 - Hyperlink
 - Infinite loop
 - Information
 - Information technology
 - Input/input device
 - Internet
 - Loop
- Loop condition/count controlled
 - Loop infinite
 - Network
 - Object
- Output/output device
 - Procedure
 - Process
 - Program
 - Repetition
 - Router
 - Run – execute
 - Selection
 - Server
 - Software
 - Stored data
 - Subroutine
 - Switch
 - Technology
- URL uniform resources locator
 - Variable
 - Web
- Web address/web browser/web page
 - Website
 - WIFI/ WWW world wide web
 - WAP -wireless access point

