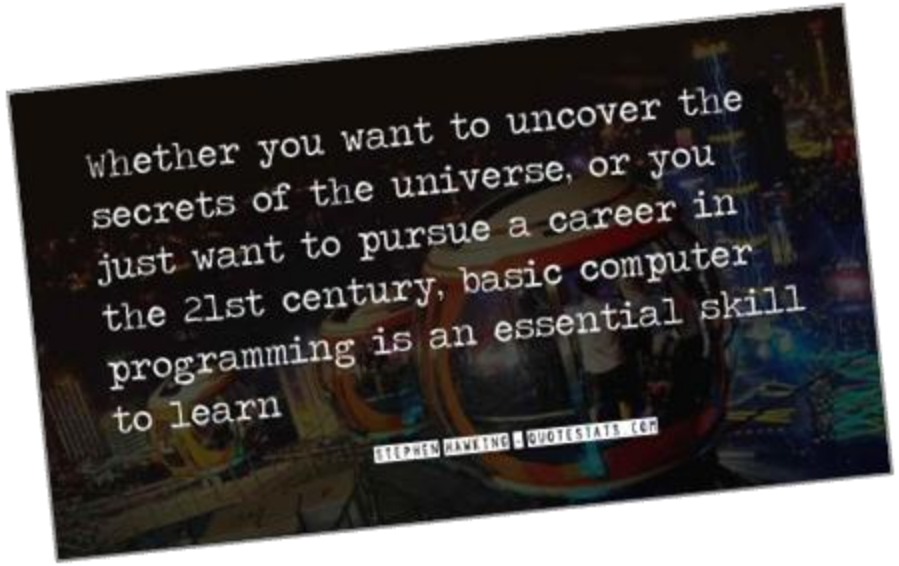
Computing



Intent and Implementation

Content Spine

Knowledge Organisers

Key Concepts

Progression Maps

Computing Intent and Implementation

Why do we teach Computing?

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 core 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.

What is our curriculum aim?

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

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

Computing Intent and Implementation

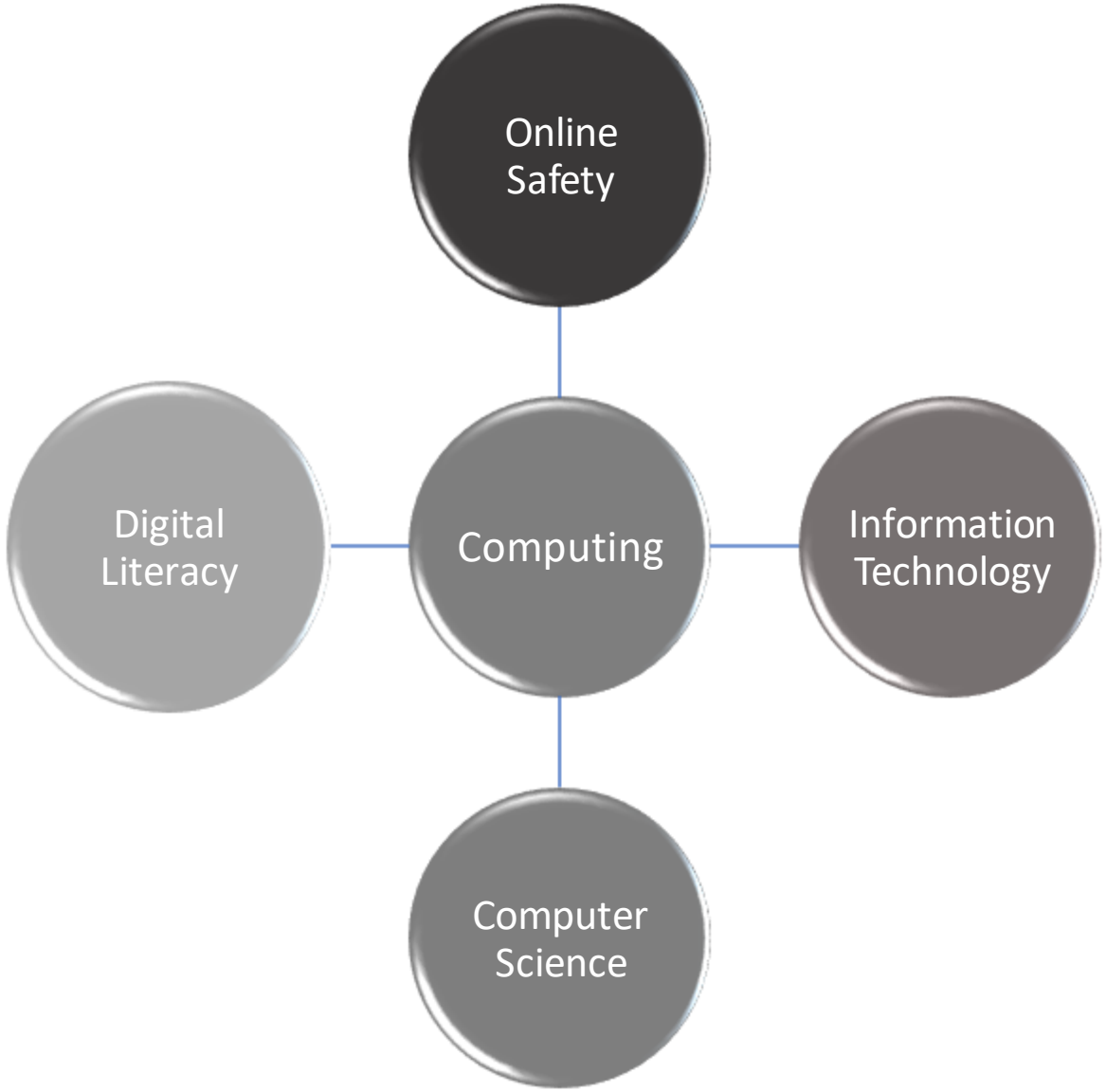
How is Computing taught at Shinfield Infant School?

At Shinfield Infant we use The Purple Mash Scheme of work for computing. Every child in KS1 is issued with their loggin details and there are able to access Purple Mash at home should they wish to do so or if work is set by class teachers to teach at home.

The Purple Mash Computing Scheme of Work is a comprehensive set of resources aligned to the National Curricula for Computing, Technology and Digital Competence. The Scheme of Work is intended to facilitate achieving the very best outcomes for children. It exposes children to a wide variety of digital tools, technological skills, and innovations. It contains everything that is needed to deliver inspiring and engaging lessons whilst allowing for the flexibility to meet individual school needs. Lessons are delivered from lesson plans with accompanying slide shows

In addition Teachers may also plan lessons outside the scheme , this is most likely to be research based tasks when pupils are engaged in finding information to support learning across the curriculum.

Computing
Key Concepts



Computing Content Spine

Reception – Development Matters Statement	Know and talk about the different factors that support their overall health and wellbeing: - sensible amounts of 'screen time'. (PSED)

	Autumn	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	**Digital Literacy** Online safety and exploring Purple Mash	**Computer Science** Grouping and sorting	**Information Technology** Pictograms	**Computer Science** Lego builders	**Information Technology** Animated Story books	**Computer Science** Coding
Year 2	**Digital Literacy** Online Safety	**Information Technology** Creating pictures	**Information Technology** Presenting Ideas	**Information Technology** Creating Music	**Computer Science** Coding	**Information Technology** Questioning
	Online safety (Digital Literacy) will be also be recapped in every unit to ensure pupils know and remember how to stay safe online.					

Computing Progression Map – Information Technology

Year 1

- Use technology purposefully to create, organise, store, manipulate and retrieve digital content.
- Understand that data can be represented in picture format
- To explore the tools of 2Create a Story's My Simple Story level

Year 2

- Select and use a variety of software to design and create a range of content, including audio and visual content.
- Present data and information, create simple fact files
- Create and store pieces of work independently
- Type a piece of text and change the font
- Use cut, copy and past keyboard shortcuts
- Use shape tools to draw, then resize and use fills
- Use data handling tools and software

Computing Progression Map – Digital Literacy and Online Safety

Year 1

- 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.
- Understand about safe logins and how to use purple mash safely

Year 2

- Use technology safely, respectfully and responsibly
- recognise acceptable/unacceptable behaviour
- Identify a range of ways to report concern about content and contact
- Understand that things can be shared electronically, including on the Internet
- To introduce email as a communication tool using 2respond simulations
- Understand that information put on line leaves a digital footprint

Computing Progression Map – Computer Science

Year 1

- 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.
- Sort items using computing software
- Follow and create instructions

Year 2

- 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.'

Year 1 Knowledge Organiser – Online Safety and Exploring Purple Mash

Key Learning

- To log in safely.
- To learn how to find saved work in the Online Work area and find teacher comments.
- To learn how to search Purple Mash to find resources.
- To become familiar with the icons and types of resources available in the Topics section.
- To start to add pictures and text to work.
- To explore the Tools and Games section of Purple Mash.
- To learn how to open, save and print.
- To understand the importance of logging out.

Key Resources

Key Vocabulary

Log in
Using a username and password to access a system.

Avatar
A digital picture to represent someone.

Log out
Leaving a computer system.

Save
Store your work as you create something so it can be accessed later.

Username
A name that is used by a person to access an online site.

My Work
The place on Purple Mash where your work is stored. Only you and your teachers can access this.

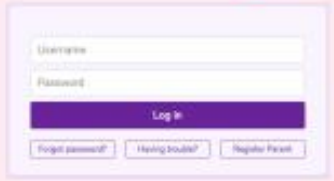
Notification
A system that lets you know if you have something to look at. On Purple Mash this is shown by a bell.

Password
A series of letters, numbers and special characters that is entered after the username to access an online site. In Purple Mash, this can also be a series of pictures.

Topics
The area on Purple Mash that contains ready-made resources.

Tools
The area on Purple Mash with the different learning apps.

Key Images


Log in Screen


Avatar


Save your work

Tools section of Purple Mash

Topic section of Purple Mash


This picture shows you if you have any notifications

The area of Purple Mash where your work is stored

Key Questions

What is a password and why should we keep them safe?

A password is a secret word or phrase that allows a user to access a website. Passwords are like toothbrushes in that they should not be shared with anyone else.

What is a digital avatar?

In Purple Mash, an avatar is a picture you create in the software to represent you. It is safer to use an avatar on the Internet than have a picture of yourself.

Where is my work stored on Purple Mash?

In Purple Mash, most of the work you save will be saved in the My Work section of Purple Mash. The only person that can see this work is the teacher and you.

Year 1 Knowledge Organiser – Grouping and Sorting

Key Learning

- To sort items using a range of criteria.
- To sort items on the computer using the 'Grouping' activities in Purple Mash.

Key Questions

In what ways can we sort objects?

We can sort objects by different criteria. These include the size of the objects, the colour of the objects or the number of sides the object has. The criteria will depend on the type of objects being sorted.

Key Resources

purple mash

2Do It Yourself

Key Questions

In what ways can we sort objects?

We can sort objects by different criteria. These include the size of the objects, the colour of the objects or the number of sides the object has. The criteria will depend on the type of objects being sorted.

Year 1 Knowledge Organiser – Pictograms

Key Learning

- To understand that data can be represented in picture format.
- To contribute to a class pictogram.
- To use a pictogram to record the results of an experiment.

Key Resources

purple mash

2Connect

2Count

Key Vocabulary

Collect Data
Gathering facts and information.

Compare
Looking at what is the same and what is different.

Data
A collection of information, used to help answer questions.

Pictogram
A diagram that uses pictures to represent data.

Record Results
Writing down what you have found out.

Title
The name given to a piece of work.

Key Images

Open, Close and Share

Add or delete columns

Frequency

Add of delete objects from the Pictogram

Year 1 Knowledge Organiser – Lego Builders

Key Learning

- To compare the effects of adhering strictly to instructions to completing tasks without complete instructions.
- To follow and create simple instructions on the computer.
- To consider how the order of instructions affects the result.

Key Vocabulary

Algorithm
A precise, step-by-step set of instructions used to solve a problem or achieve an objective.

Code
Instructions that a programmer enters into a computer that cause the computer to perform a certain way.

Computer
An electronic device for storing and processing data.

Debugging
To find and remove errors from computer hardware or software.

Instructions
Detailed information about how something should be done or operated.

Program
An algorithm that has been coded into something that can be run by a machine,

Key Resources

purple mash

Paint Projects

Key Questions

What is an instruction?

An instruction takes you through something step by step so that you can successfully complete a task.

Why do we need to debug code?

When you write code, it won't always work correctly first time. When you search for the errors and correct them, this is known as debugging.

Year 1 Knowledge Organiser – Animated Storybooks

Key Learning

- To introduce e-books and the 2Create a Story tool.
- To add animation to a story.
- To add sound to a story, including voice recording and music the children have composed.
- To work on a more complex story, including adding backgrounds and copying and pasting pages.
- To share e-books on a class display board.

Key Resources

purple mash

2Create a Story

Key Vocabulary

Animation
An object that moves on screen.

Background
An image inserted into a file that sits behind text, objects, or buttons.

Clip-art Gallery
A place in software such as 2Create a Story where a library of images can be found and inserted into a file.

E-book
A book that can be read on the computer or on a tablet.

Edit
Edit means to change something. For example, change some text to improve it.

Font
The style of text used in a piece of writing on a computer or tablet.

Sound
Sounds can be uploaded into software from a file or created.

Sound Effect
A sound other than speech or music made for use in a play, film or computer file.

Text
Words, letters, numbers or symbols entered into a computer, such as writing text in 2Create a Story.

Key Questions

What is 2Create a Story?

With 2Create a Story, you can create e-books including animated pages, sounds, narration and music.

What is an animated story?

An animated story is a story where the images in the foreground can move in a variety of ways.

How can I make my story better?

As well as adding animation to the story, it can be improved by adding sounds or sound effects to the different pages.

Key Images


Open, close or share a file


Plan out your story


Play your story


Add animation and sounds to the story


Choose a story background


Undo or redo the last action


Choose the font for the story


Copy and paste

Year 1 Knowledge Organiser –Coding

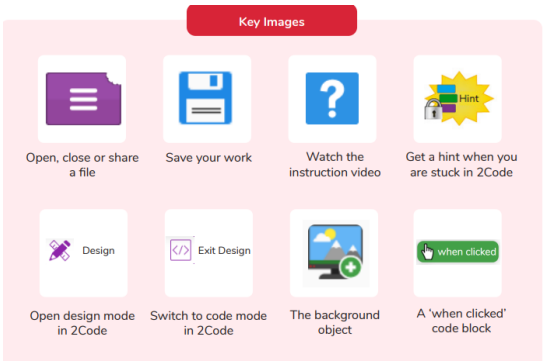
Key Learning

- To understand what instructions are and predict what might happen when they are followed.
- To use code to make a computer program.
- To understand what object and actions are.
- To understand what an event is.
- To use an event to control an object.
- To begin to understand how code executes when a program is run.
- To understand what backgrounds and objects are.
- To plan and make a computer program.

Key Resources

purple mash

Key Images



Key Vocabulary

Action
The way that objects change when programmed to do so. For example, move.

Algorithm
A precise, step-by-step set of instructions used to solve a problem or achieve an objective.

Background
In 2Code the background is an image in the design that does not change.

Code
Instructions that a programmer enters into a computer that cause the computer to perform a certain way.

Coding
Writing instructions that the computer can process (understand) to make programs (software).

Command
A single instruction in 2Code.

Debug/ Debugging
Fixing code that has errors so that the code will run the way it was designed.

Event
An occurrence that causes a block of code to be run. The event could be the result of user action such as the user pressing a key or clicking the screen.

Execute
This is the proper word for when you run the code. We say, 'the program (or code) executes.'

Key Questions

What is coding?

Writing instructions in a way that a computer can interpret them to make a program.

Why is it useful to design before coding?

It helps you to get a clear idea of what you want your program to do. You can use the design to decide which objects you need to add, what to call them and what actions they should perform.

How can you make characters move in a 2Code program?

In design mode, add a character. Change properties such as the name and scale. Exit from design mode and drag your character's code block into the coding window. From the properties menu, select right, left, up or down.

Instruction
Detailed information about how something should be done or operated.

Object
Items in a program that can be given instructions to move or change in some way (action).

Output
Information that comes out of the computer e.g. sound that comes out of the speakers.

Plan
When coding, a plan means including the objects and actions into a written document that shows what the program should look like (the design) and what the objects should do (the actions).

Programmer
A person who writes computer programs. Sometimes called a coder.

Properties
These determine the look and size of an object. Each object has properties such as the image, scale and position of the object.

Run
This is what you do when you click the Play button in 2Code: The program runs.

Year 2 Knowledge Organiser – Online Safety

Key Learning

- To know how to refine searches using the Search tool.
- To use digital technology to share work on Purple Mash to communicate and connect with others locally.
- To have some knowledge and understanding about sharing more globally on the Internet.
- To introduce Email as a communication tool using 2Respond simulations.
- To understand how we should talk to others in an online situation.
- To open and send simple online communications in the form of email.
- To understand that information put online leaves a digital footprint or trail.
- To identify the steps that can be taken to keep personal data and hardware secure.

Key Questions

Why is a search bar useful?

The search bar on Purple Mash or on a website helps the user to quickly find the resources they are looking for.

What is an email?

An email is a way of sending messages electronically from one device to another. An email can have items such as pictures and videos attached to it.

What is meant by my Digital Footprint?

A digital footprint is a term used to describe the traces of yourself that you leave online. With every website you visit, you leave a trail or footprint showing that you've been there.

Key Vocabulary

Search
Look for information (in a database or the World Wide Web) using a search engine.

Displayboard
In Purple Mash, this is a tool that enables you to share work with a wide audience.

Internet
A way to send information from one computer to another anywhere in the world using technology such as phones, satellites and radio links.

Sharing
Post or repost (something) on a website.

Email
Messages distributed by electronic means from one computer user to one or more people.

Attachment
A computer file sent with an email.

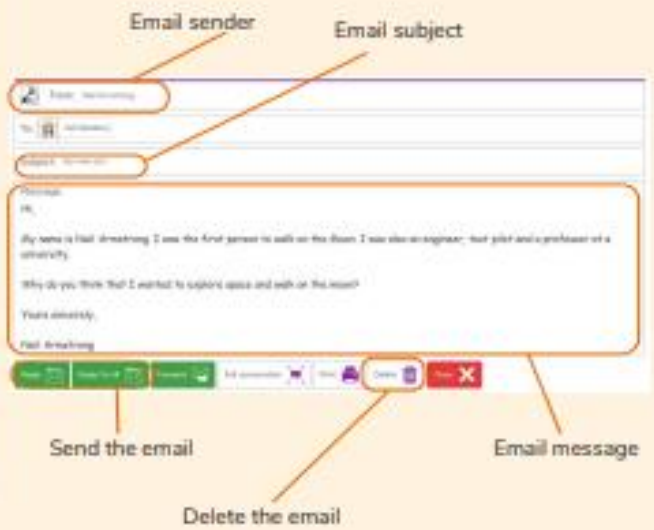
Digital Footprint
The information about a person that exists on the Internet as a result of their online activity.

Key Images

Display board

Search Bar

Inbox



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Year 2 Knowledge Organiser – Presenting Ideas

Key Images


Open, close and share a file


Create a new 2Connect document

Node


Collaboration (working together) on or off


Choose a quiz question on 2Quiz


Play the quiz


Preview the quiz question


Change the quiz settings

Key Questions

What do we need to think about when planning a presentation?

The important thing to consider is the audience. Think about how old they are and what they would find interesting. For younger children, a presentation with pictures may be more appropriate.

Why should I plan out my presentation?

Planning out your presentation allows you to make sure you have included all the information you need to. It is easier to do this in the planning phase rather than when you have started the presentation.

Key Learning

- To explore how a story can be presented in different ways.
- To make a quiz about a story or class topic.
- To make a fact file on a non-fiction topic.
- To make a presentation to the class.

Key Resources

purple mash

Key Vocabulary

Concept Map (Mind Map)
A tool for organising and representing knowledge. They form a web of ideas which are all interconnected.

Node
A way to represent a concept or idea using text and/or images.

Animated
A process by which we see still pictures appear to move.

Quiz
A test of knowledge, especially as a competition between individuals or teams as a form of entertainment.

Non-Fiction
Informative or factual writing.

Presentation
A speech or talk in which a new product, idea, or piece of work is shown and explained to an audience.

Narrative
A speech or talk in which a new product, idea, or piece of work is shown and explained to an audience.

Audience
The people giving attention to something.

Year 2 Knowledge Organiser – Creating Pictures

Key Learning

- To learn the functions of the 2Paint a Picture tool.
- To learn about and recreate the Impressionist style of art (Monet, Degas, Renoir).
- To recreate Pointillist art and look at the work of pointillist artists such as Seurat.
- To learn about the work of Piet Mondrian and recreate the style using the lines template.
- To learn about the work of William Morris and recreate the style using the patterns template.
- To explore surrealism and eCollage.

Key Resources

purple mash

2Paint a Picture

Key Vocabulary

Impressionism
The impressionist movement began in the 1860s and became most popular in the 1870s and 1880s. It differed from the common art of the time because it wasn't religious art, showing scenes from religious stories or specific events, but was just intended to capture a scene at a moment. The art gave an 'impression' of the scene.

Palette
Within computer graphics, this is the range of colours or shapes available to the user.

Pointillism
Pointillism was a development of impressionism. It was invented mainly by George Seurat and Paul Signac. Pointillist paintings are created by using small dots in different colours to build up the whole picture. Colours are placed near each other rather than mixed.

Share
An instance of posting or reposting something on a social media website or application.

Surrealism
Explored the subconscious areas of the mind. The artwork often made little sense as it was usually trying to depict a dream or random thoughts.

Template
Something that serves as a model for others to copy.

Key Images

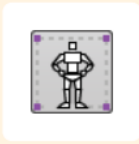

Choose the style you want to paint in


Open, Save and Share your picture

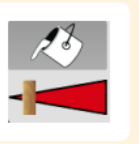

Choose a background for your picture


Undo and redo


Zoom in and Zoom out


Outline options


Eraser and colour palettes


Fill tool and pen thickness

Year 2 Knowledge Organiser – Creating Music

Key Learning

- To make music digitally using 2Sequence.
- To explore, edit and combine sounds using 2Sequence.
- To edit and refine composed music.
- To think about how music can be used to express feelings and create tunes which depict feelings.
- To upload a sound from a bank of sounds into the Sounds section.
- To record and upload environmental sounds into Purple Mash.
- To use these sounds to create tunes in 2Sequence.

Key Resources

purple mash

2Sequence

Key Vocabulary

bpm
The number of beats played in a minute.

Instrument
An object or device for producing musical sounds.

Soundtrack
A recording of the musical accompaniment of a film.

Composition
A creative work, especially a poem or piece of music.

Music
Vocal or instrumental sounds (or both) played alone or combined.

Tempo
The speed at which a passage of music is, or should be, played.

Digitally
By means of digital or computer technology.

Sound Effects (Sfx)
A sound other than speech or music made artificially for use in a play, film, or piece of music.

Volume
How loud a piece of music is.

Key Questions

What is meant by digital music?

Digital music is made using a computer or other device. Digital music allows the computer to copy the sound made by instruments and combine them together to make a piece of music.

How can I change how my music sounds?

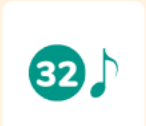
You can change how your digital music sounds in many ways. One way is to increase the tempo of the music or vary the volume of each instrument in the piece.

What is it meant by the tempo of the music?

Tempo is measured in BPM, or beats per minute. One beat every second is 60 BPM.

Key Images

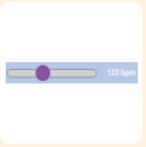
Open, save and share a piece of your music



Change the number of quavers in the music

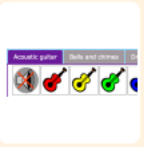
Loop or unloop the piece of music

Play the composed tune



Changes the beats per minute in the music

Increase or decrease the volume of an instrument



Choose the digital instrument to use

Delete the music

Year 2 Knowledge Organiser – Coding

Key Learning

- To understand what an algorithm is.
- To create a computer program using an algorithm.
- To create a program using a given design.
- To understand the collision detection event.
- To understand that algorithms follow a sequence.
- To design an algorithm that follows a timed sequence.
- To understand that different objects have different properties.
- To understand what different events do in code.
- To understand the function of buttons in a program.
- To understand and debug simple programs.

Key Resources

purple mash

2Dos

Free code chimp

Tools

Key Vocabulary

Object
An element in a computer program that can be changed using actions or properties.

Predict
Say what you think will happen when a piece of code is run.

Properties
All objects have properties that can be changed in design or by writing code
e.g. image, colour and scale properties.

Run
To cause the instruction in a program to be carried out.

Scale
The size of an object in 2Code.

Scene
A visual aspect of a program.

Sequence
When a computer program runs commands in order.

Sound
This is a type of output command that makes a noise.

Test
When code is run to check that it works correctly.

Text
Typed letters on the screen.

Timer
Use this command to run a block of commands after a timed delay or at regular intervals.

When clicked/swiped
An event command. It makes code run when you click or swipe on something (or press/swipe your finger on a touchscreen).

Key Questions

What is an algorithm? Why is it useful in coding?

An algorithm is a step-by-step set of instructions used to solve a problem or achieve an objective.
A clear algorithm can help you to create code that does what it is supposed to do.

Why is it important to know there are different object types?

Different object types can do different actions. For example, in 2Code, an animal object can do actions such as up, down and stop. A turtle goes forward, backward, pen down and pen up.

If you are good at coding, you don't need to debug. Is this true?

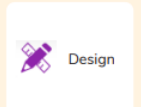
All coders need to debug to make sure that their program works correctly, and the code does what they intended. As you get better at coding, your programs will get more complex and debugging gets even more important.

Key Images

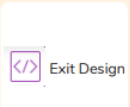

Open, close or share a file.


Save your work.


Watch the instruction video.



Open design mode in 2Code.



Switch to code mode in 2Code.


A timer code block.

An object property.

Year 2 Knowledge Organiser – Questioning

Key Learning

- To learn about data handling tools that can give more information than pictograms.
- To use yes/no questions to separate information.
- To construct a binary tree to identify items.
- To use 2Question (a binary tree database) to answer questions.
- To use a database to answer more complex search questions.
- To use the Search tool to find information.

Key Resources

purple mash


2Count


2Investigate

2Question

Key Vocabulary

Pictogram
A diagram that uses pictures to represent data.

Collate
Collect and combine (texts, information, or data).

Avatar
An icon or figure representing a person in a video game, Internet forum or other online format.

Question
A sentence written or spoken to find information.

Binary Tree
A simple way of sorting information into two categories.

Database
A computerised system that makes it easy to search, select and store information.

Data
Facts and statistics collected together that can provide information.

Key Questions

How does a Pictogram show information?

On a pictogram, data is represented by pictures. Pictograms are set out in the same way as bar charts, but instead of bars they use columns of pictures to show the numbers involved.

How is information organised in a binary tree?

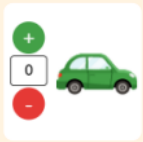
On a binary tree information is organised through a series of questions that can only be answered 'yes' or 'no'. Eventually only one item is left in the category which forms the end of a branch of the binary tree.

How can a database help organise information?

A database is a way of storing information in such a way that it can easily be searched. Databases are designed to hold lots of information that would be difficult to search without using a computer.

Key Images


Open, close or share information



Enter data into a pictogram


Add or delete columns in a pictogram

Add a question to sort the information in a binary tree

Give a name to the binary tree


Find information in a database


Sort, group and arrange information in a database