Computing Progression Map
Cycle A

"A computer is not a device anymore. It is an extension of your mind and your gateway to other people"

Mark Shuttleworth

Computing Curriculum Map
Cycle A

Programming

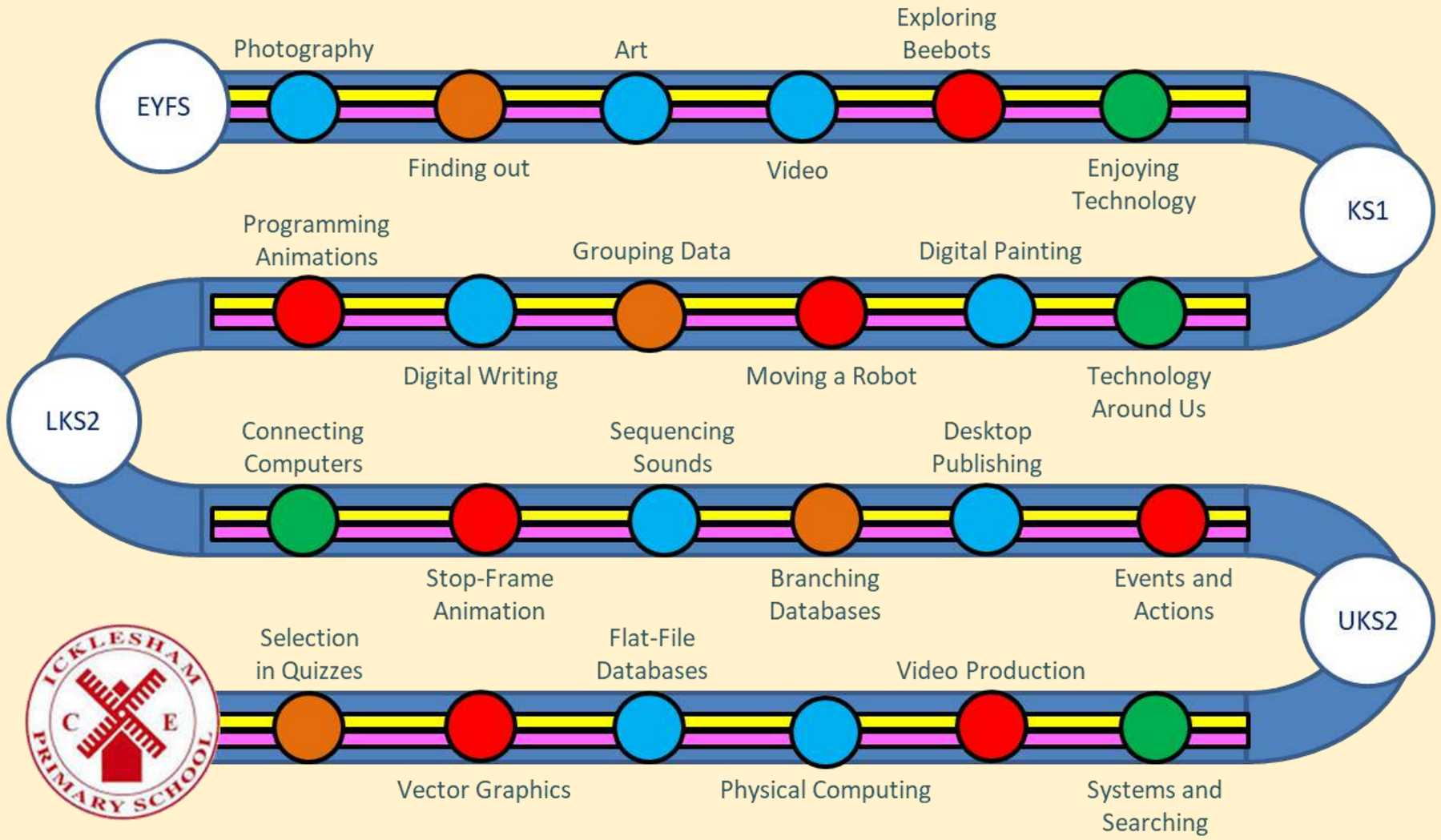
Data and Information

Computer Systems and Networks

Creating Media

Digital Literacy

Online Safety



Cycle A –Understanding the World -EYFS – Online Safety

Objective
To know what online safety means

I wonder...
How can we use the internet safely?

Substantive Knowledge (Content)

- To know that if you see something you don't like you should tell an adult
- To know that the internet can be used for communication, education and entertainment
- To know that you can use the internet to communicate with friends and family
- To know that you should be nice using the internet as what you say / send will be stored (digital footprint)
- To know that the internet can help us learn new information and practise skills i.e. spelling and timetables
- To know that there are rules we need to know to keep safe i.e. not to give out personal information
- To know that personal information is information about you like your name, address, school and passwords

Future Learning

KS1
Children will be learning some rules for keeping safe online.

LKS2
Children will be learning if everything online is real.

UKS2
Children will be learning what an online community is.

Skills

Communicating	Talking with someone about something including things we like and don't like
Following rules	Listening to what can and can't be done
Using hardware and software	Using technology, e.g. ipads and apps for a purpose

Concepts

Online safety	Keeping ourselves and others safe when using the internet
Communication	Sharing meaning and information through words, images or actions
Consent	Permission or agreement
Responsibility	Being safe online, using social media responsibly and respectfully, privacy, cyberbullying
Cause and consequence	Things that happen can impact things that happen later on

Key vocabulary

Internet	A network, or system, that connects millions of computers worldwide
online	Controlled by or connected to a computer
rules	How we should behave
safe	Protect you from harm
personal information	Information used to identify you. E.g. your name, age, school.
private information	
communicate	

Assessment points

- **Communicate** what they like and don't like
- **Understand** what private means
- **Explain** how the internet can be used
- **Understand** why we should be nice to others
- **Identify** some rules for using the internet
- **Explain** what personal information is

EYFS Coverage

- Computing is not a discrete area in the EYFS but it underpins all other areas. This unit will enable learning in all other curriculum areas as children record their learning in order to reflect upon and evaluate it.

Minimum expectations, including for pupil with SEND
Children know what to do if they see something they don't like. With support, children can remember some of the rules for keeping safe online.

High prior attainment and extension opportunities, including for pupils with SEND
Children to navigate through a specific webpage to explore what they like and don't like.

Cycle A – Computing – KS1 – Online Safety

Objective
To know where to go for help when using the internet

I wonder...
Why do we need rules for using the internet?

Substantive Knowledge (Content)

- To know the rules we need to keep safe online i.e. never share personal information online don't respond to emails, texts, or messages from strangers, don't post or share photos online, don't click links, open attachments, or accept gifts from someone you don't know, never agree to meet someone you met online
- To know that you should tell a trusted adult if something online worries you i.e. a parent or teacher
- To know that websites have systems in place so you can flag anything upsetting
- To know that you should behave politely and respectfully online
- To know that a search engine is a way of finding information or a website
- To know that private information id information about yourself or passwords

Prior Learning

EYFS
Children have learnt what to do if they don't like something and how to use the internet.

Future Learning

LKS2
Children will be learning if everything online is real.

UKS2
Children will be learning what an online community is.

Skills

Communicating	Talking with someone about something including things we like and don't like
Identify	Finding something that is different to others
Following rules	Listening to what can and can't be done
Using hardware and software	Using technology, e.g. ipads and apps for a purpose

Concepts

Online safety	Keeping ourselves and others safe when using the internet
Communication	Sharing meaning and information through words, images or actions
Consent	Permission or agreement
Responsibility	Being safe online, using social media responsibly and respectfully, privacy, cyberbullying
Cause and consequence	Things that happen can impact things that happen later on

Key vocabulary

zip, block, flag code	Rules on how to keep safe online
rules	How we should behave
internet	A network, or system, that connects millions of computers worldwide
private information	Information that should not be shared e.g. passwords.
flag	Letting somebody know that you have found something that upsets you
search	
protect	
devices	
safe	

Assessment points

- **Identify** some rules for keeping safe online
- **Understand** where to go for help if they are worried
- **Explain** what flagging is
- **Understand** what the zip, block, flag code is
- **Identify** good and bad online behaviours
- **Use** a search engine online
- **Explain** what is meant by private information

National Curriculum Coverage

- 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.

Minimum expectations, including for pupils with SEND
Children to know who they can speak to if they are worries about something. With support, children can identify some of the rules we need for using the internet.

High prior attainment and extension opportunities, Including for pupils with SEND
Children to think about, discuss and reason why some information is private and some is not.

Cycle A – Computing – LKS2 – Online Safety

Objective
How to keep safe online

I wonder
Is everything online real?

Substantive Knowledge (Content)

- To know that when I'm online I should behave as I do offline
- To know that you shouldn't trust everyone online
- To know that cyberbullying is using bullying behaviour online
- To know that ownership is taking responsibility for something you have said or written online
- To know that the difference between belief, opinion and fact
- To know that people can communicate online through instant messaging, email, video conferencing, text messing, social media, chat rooms and forums
- To know that the difference between real life and online life and how to use the internet responsibly

Prior Learning

EYFS
Children have learnt what to do if they don't like something and how to use the internet.

KS1
Children have learnt some rules for keeping safe online.

Future Learning

UKS2
Children will be learning what an online community is.

KS3
Children will be learning about online safety including, malware, phishing, cyberbullying, trolling and using firewalls and antivirus software to protect from viruses.

Skills

Communicating	Talking with someone about something including things we like and don't like
Following rules	Listening to what can and can't be done
Using hardware and software	Using technology, e.g. ipads and apps for a purpose

Concepts

Online safety	Keeping ourselves and others safe when using the internet
Communication	Sharing meaning and information through words, images or actions
Consent	Permission or agreement
Responsibility	Being safe online, using social media responsibly and respectfully, privacy, cyberbullying
Cause and consequence	Things that happen can impact things that happen later on

Key vocabulary

cyber bullying	Using bullying behaviour online
trust	Believe in the reliability of someone or something
ownership	Who owns something
Internet	Connecting millions of computers worldwide
communicate	Share or exchange information
keywords	
imaginary	
devices	
copyright	
fair use	
password	
protect	
opinion	
fact	
belief	

Assessment points

- **Explain** what online safety means
- **Identify** beliefs, opinions and facts
- **Explain** why you shouldn't trust everyone and everything online
- **Understand** how to people communicate online
- **Understand** what ownership means
- **Recognise** the difference between real life and online life

National Curriculum Coverage

- 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.

SEN/D minimum expectations, including for pupils with SEND
Children to explain what online safety means. With support, children can recognise some differences between real life and online life.

High prior attainment and extension opportunities, including for pupils with SEND
Children to think about, discuss and reason why we shouldn't believe everything online.

Cycle A – Computing – UKS2 – Online Safety

Objective
How to keep safe online

I wonder…
What an online community is?

Substantive Knowledge (Content)

- To know that an online community is a group of people who have a common interest and communicate through the internet
- To know that people in an online community are sharing their online profiles not necessarily who they are in real life
- To know that positive contributions online communities have include gaining friends, sharing interests and developing knowledge
- To know that negative contributions online communities have include cyber bullying, sharing insensitive or even harmful and abusive behaviour
- To know that you can use different website to get help online
- To know that you can report or flag any online worries to a trusted adult or to the website you are using
- To know that information you share online is difficult to take it back. You may be able to remove the post you shared, but you can't stop other people from copying or screenshotting it and sending it on to more people
- To know that some online information may not be true because the internet allows for some degree of anonymity

Prior Learning
EYFS
Children have learnt what to do if they don't like something and how to use the internet.

KS1
Children have learnt some rules for keeping safe online.

LKS2
Children have learnt if everything online is real.

Future Learning

KS3
Children will be learning about online safety including, malware, phishing, cyberbullying, trolling and using firewalls and antivirus software to protect from viruses.

Skills

Communicating	Talking with someone about something including things we like and don't like
Following rules	Listening to what can and can't be done
Using hardware and software	Using technology, e.g. ipads and apps for a purpose

Concepts

Online safety	Keeping ourselves and others safe when using the internet
Communication	Sharing meaning and information through words, images or actions
Consent	Permission or agreement
Responsibility	Being safe online, using social media responsibly and respectfully, privacy, cyberbullying
Cause and consequence	Things that happen can impact things that happen later on

Key vocabulary

online community	A group of people that meet online
positive	Something good
negative	Something bad
contributions	Things that are shared with others
communicate	Share or exchange information
keywords	
imaginary	
devices	
Internet	
password	
protect	
cyber bullying	
worries	
report	

Assessment points

- **Explain** what an online community is
- **Identify** positive contributions an online community can have
- **Explain** some negative contributions an online community can have
- **Understand** how to get help online
- **Understand** how information is shared online
- **Know** how to report any online worries
- **Understand** why some online information may not be true

National Curriculum Coverage

- 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.

SEN/D minimum expectations, including with pupils with SEND
Children to explain what an online community is. With support, children can identify some positive and negative contributions of an online community.

High prior attainment and extension opportunities, including for pupils with SEND
Children to think about, discuss and reason why some online information may not be true.

Cycle A – EYFS- Understanding the World - Unit 1: Photography

Objective
To use photography apps to support learning

I wonder...
How can we make sure we remember how great this work is after we have tidied it away?

Substantive Knowledge (Content)

- To know we can record our learning using photography apps on the iPad.
- To know we need to ensure that the subject of our photo is in focus
- To know we can use photography to create art
- To know different photography apps do different things
- To know we can use apps on the iPad to manipulate photos we have taken.
- To know we must always obtain consent before taking a photo of someone or their work

Future Learning

KS1
Children will be creating media using digital photography.

LKS2
Children will be learning about photo editing.

UKS2
Children will be learning about video production.

Skills

Using hardware and software	Using technology, e.g. ipads and apps for a purpose
Creating media	design and development, respectful and responsible communication, presenting, creating content

Concepts

technology	Something that is designed to help with a task.
App (abb. Application)	Computer program designed for specific purposes
digital	Using or relating to digital signals or technology
focus	Clarity, not blurry
consent	Permission or agreement

Key vocabulary

tablet	Small, flat computer, controlled by touching the screen
iPad	Tablet brand name
camera	Device for taking photographs
photograph	Picture produced using a camera
record	To keep information for the future
app	Computer program designed for specific purposes
focus	Clarity, not blurry
consent	Permission or agreement
delete	To remove data, documents etc from a computer

Assessment points

- **Use** photography apps to record learning
- **Create** photos that are in focus
- **Use** photography apps to create art
- **Use** a range of photography apps for different effects
- **Create** art by manipulating photos we have taken
- **Understand** what is meant by consent and that it is essential

EYFS Coverage

- Computing is not a discrete area in the EYFS but it underpins all other areas. This unit will enable learning in all other curriculum areas as children record their learning in order to reflect upon and evaluate it.

Minimum expectations, including for pupils with SEND
With adult help

- **Use** photography apps to record learning
- **Use** photography apps to create art
- **Understand** what is meant by consent and that it is essential

High prior attainment and extension opportunities, including for pupils with SEND
Children to share their developing skills with others, supporting their friends to learn how to use apps that they are already confident with.

Cycle A –EYFS –Understanding the World - Unit 2: Finding out

Objective
To use the internet to support our learning

I wonder...
What questions do you have about that? How could we find out the answers?

Substantive Knowledge (Content)

- To know we can use search engines on the internet to find information – answers to questions, images and videos that will help us with our learning.
- To know that Google is a search engine
- To know we can type questions or key words into the search box to find information or images
- To know some computers will allow us to use our voice to search instead of typing
- To know some information we find will be more useful than others

Future Learning

KS1
Children will be learning about technology around us.

LKS2
Children will be learning about the Internet.

UKS2
Children will be learning about systems and searching tools

Skills

Using hardware and software	Using technology, e.g. ipads and apps for a purpose
Using computing systems and networks	Using e.g. the internet
Using data and information	collecting, analysing, evaluating, presenting data and information

Concepts

technology	Something that is designed to help with a task.
internet	The large system of connected computers around the world that enables people to share information and communicate with one another

Key vocabulary

Question	A sentence or phrase used to find out information
computer	An electronic device for working with information
screen	The flat surface of the computer on which pictures and words are shown
Search engine	Computer software used to search data
Search box	A space on a computer screen where you type a word or phrase relating to information you want to find
click	Push the yellow mouse button
cursor	An arrow on the computer screen to show where you are working.
mouse	Controls the cursor on the screen
keyboard	Input device with a set of keys which allow you to type letters and numbers.
type	To write using a computer keyboard
microphone	A piece of equipment that you speak into to record your voice
information	Facts about a situation, person, event etc
image	A picture

Assessment points

- **Use** search engines, primarily Google, to find information and images.
- **Use** a computer keyboard to type words / phrases into search engine
- **Use** microphone to dictate words / phrases into search engines
- **Collect** information
- **Evaluate** whether or not the information we have collected answers our question.
- **Understand** that some information we find might not be useful

EYFS Coverage

- Computing is not a discrete area in the EYFS but it underpins all other areas. This unit will enable learning in all other curriculum areas as children find information to enhance their learning and develop their interests.

Minimum expectations, including for pupils with SEND
With adult support

- **Use** search engines, primarily Google, to find information and images.
- **Use** a computer keyboard to type words / phrases into search engine
- **Use** microphone to dictate words / phrases into search engines
- **Collect** information

High prior attainment and extension opportunities, including for pupils with SEND
Children will use the computer independently to find information they need for their child-initiated projects and interests.

Cycle A –EYFS –Understanding the World - Unit 3: Art

Objective
To use a range of apps to create art

I wonder...
What different tools and resources can people use to create works of art?

Substantive Knowledge (Content)

- To know we can use apps to create art.
- To know we can use apps to create art on a small scale (e.g. on an iPad) or a large scale (e.g. on an interactive whiteboard)
- To know that different apps offer different possibilities
- To know that different tools within apps produce different effects.

Future Learning

KS1
Children will develop their skills in digital painting.

LKS2
Children will be learning about photo editing.

UKS2
Children will be learning about vector graphics.

Skills

Using hardware and software	Using technology, e.g. ipads and apps for a purpose
Creating media	design and development, respectful and responsible communication, presenting, creating content

Concepts

technology	Something that is designed to help with a task.
App (abb. Application)	Computer program designed for specific purposes
digital	Using or relating to digital signals or technology

Key vocabulary

tablet	Small, flat computer, controlled by touching the screen
iPad	Tablet brand name
App	Computer program designed for specific purposes
click	Push the yellow mouse button
cursor	An arrow on the computer screen to show where you are working.
mouse	Controls the cursor on the screen
tool	A feature of a program that helps you do particular things
drag	To move something on a computer screen
select	To choose something from a computer menu
undo	To go back a step and reverse an action
erase	To rub out a mistake

Assessment points

- **Use** tools in apps to create different effects
- **Create** art on a small scale using an iPad.
- **Create** art on a large scale using the interactive whiteboard.

EYFS Coverage

- Computing is not a discrete area in the EYFS but it underpins all other areas. This unit will enable learning in Expressive Arts and Design:
- Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. *Creating with Materials ELG*
- Share their creations, explaining the processes they have used. *Creating with Materials ELG*

Minimum expectations, including for pupils with SEND
With adult support

- **Use** tools in apps to create different effects
- **Create** art on a small scale using an iPad.
- **Create** art on a large scale using the interactive whiteboard.

High prior attainment and extension opportunities, including for pupils with SEND
Remind children of apps we have used to create art for them to independently select and use an app for their own child-initiated art projects.

Cycle A –EYFS –Understanding the World - Unit 4: Video

Objective
To use video apps to support learning.

I wonder...
How can we show this dance / helicopter story / PE skill to our grown-ups?

Substantive Knowledge (Content)

- To know we can film our play and learning using video apps on the iPad.
- To know we can use apps to combine videos and images and sound to create new videos
- To know we can upload videos e.g. onto Tapestry to store and share them and rewatch them.
- To know that when videos have been uploaded we should delete them from the iPad so it does not get full up
- To know that we can create time lapse videos to record changes that take place slowly over time (e.g. butterfly emerging from chrysalis)
- To know that we can create slow motion videos
- To know we can speed up videos (e.g. to show a lengthy process more quickly)
- To know we must always obtain consent before taking a video of someone or their work

Future Learning

KS1
Children will be learning about programming animations

LKS2
Children will be learning about stop-frame animation.

LUS2
Children will be learning about video production.

Skills

Using hardware and software	Using technology, e.g. ipads and apps for a purpose
Creating media	design and development, respectful and responsible communication, presenting, creating content

Concepts

technology	Something that is designed to help with a task.
App (abb. Application)	Computer program designed for specific purposes
digital	Using or relating to digital signals or technology
consent	Permission or agreement

Key vocabulary

tablet	Small, flat computer, controlled by touching the screen
iPad	Tablet brand name
App	Computer program designed for specific purposes
film	To record moving pictures with a camera / other technology
Video	A recording of moving pictures and sound
Record	To store moving pictures using electronic equipment so they can be seen later
Play	To cause a machine to produce a video
pause	To make a recording stop for a short time
edit	To make changes to a video, deciding what will be removed and what will be kept in
upload	To copy or move programs or information to a larger computer system or the Internet
delete	To remove data, documents etc from a computer
consent	Permission or agreement
Time lapse video	Video made from a sequence of frames at set intervals to record changes that take place slowly over time
Slow motion	Video playing at a slower speed than normal
Speed up	Video playing at a faster speed than normal

Assessment points

- **Use** video apps to film learning and play.
- **Create** new videos by combining videos and images and sound, using apps.
- **Use** Tapestry to upload and share videos
- **Create** time lapse videos
- **Create** slow motion videos
- **Create** sped-up videos
- **Understand** what is meant by consent and that it is essential

EYFS Coverage

- Computing is not a discrete area in the EYFS but it underpins all other areas. This unit will enable learning in all other curriculum areas as children film their learning and play in order to reflect upon and evaluate it.

Minimum expectations, including for pupils with SEND
With adult support

- **Use** video apps to film learning and play.
- **Create** time lapse videos
- **Create** slow motion videos
- **Create** sped-up videos
- **Understand** what is meant by consent and that it is essential

High prior attainment and extension opportunities, including for pupils with SEND
Children to share their developing skills with others, supporting their friends to learn how to use apps that they are already confident with. Children to be encouraged and facilitated to independently use video apps to film their child-initiated play and learning projects.

Cycle A –EYFS –Understanding the World - Unit 5: Exploring bee bots

Objective
To explore the functions of a bee bot

I wonder...
I wonder how this works?

Substantive Knowledge (Content)

- To know the functions of the different buttons.
- To know that Bee bots enable pupils to create simple algorithms
- To know the order in which to press the buttons in order for it to move.

Future Learning

KS1
Children will be learning about robot algorithms.

LKS2
Children will be learning about events and action in programs.

UKS2
Children will be learning about variables in games.

Skills

Using hardware and software	Using technology, e.g. ipads and apps for a purpose
Programming	interpreting, creating and evaluating algorithms, programming to accomplish specific goals, detecting and correcting errors

Concepts

technology	Something that is designed to help with a task.
logic	The process of working step-by-step to understand a problem and develop a solution
algorithm	A step by step procedure for solving a problem
program	A set of instructions for a computer to follow to perform a task

Key vocabulary

bee bot	A robot that looks like a bee
button	A small object that you press to operate a device or a machine
press	To push something firmly
directions	Which way you will go
instructions	A list of commands and directions on how to do something
forwards	Move in the direction you are facing
backwards	The opposite of forwards
left	On or towards the side of your body that is to the west when you are facing north
right	On or towards the side of your body that is to the east when you are facing north
turn	To change direction
clear	Delete any previous data

Assessment points

- **Use** bee bots in play
- **Program** a bee bot, using exploratory techniques to understand functions

EYFS Coverage

- Computing is not a discrete area in the EYFS but it underpins all other areas. This unit will enhance mathematical learning as they use technology to explore positional concepts and vocabulary.

Minimum expectations, including for pupils with SEND
With adult support

- **Use** bee bots in play
- **Program** a bee bot, using exploratory techniques to understand functions

High prior attainment and extension opportunities, including for pupils with SEND
Children will plan and program a sequence of moves to reach an identified destination.

Cycle A –EYFS – Understanding the World -Unit 6: Enjoying technology: playing, watching, listening

Objective
To use technology to support playing and learning

I wonder...
How do we watch films?

Substantive Knowledge (Content)

- To know we can play videos, music and games to support our playing and learning.
- To know we can use a range of technology, machines and apps (e.g. the smartboard, cd players, Spotify, ipads, computers) to support our playing and learning.

Future Learning

KS1
Children will be learning about technology around us.

LKS2
Children will be learning about connecting computers.

UKS2
Children will be learning about communication and collaboration.

Skills

Using hardware and software	Using technology, e.g. ipads and apps for a purpose
Using computing systems and networks	Using e.g. the internet

Concepts

technology	Something that is designed to help with a task.
App (abb. Application)	Computer program designed for specific purposes

Key vocabulary

Video	A recording of moving pictures and sound
Music	A pattern of sounds made by instruments, singing or both, to give pleasure to listeners
Game	An entertaining activity
Play	To cause a machine to produce a video or piece of music / to take part in a game
Pause	To make a recording stop for a short time
Stop	To make a recording finish
Search engine	Computer software used to search data
Search box	A space on a computer screen where you type a word or phrase relating to information you want to find
click	Push the yellow mouse button
cursor	An arrow on the computer screen to show where you are working.
drag	To move something on a computer screen
select	To choose something from a computer menu
screen	The flat surface of the computer on which pictures and words are shown
Full screen	Occupying all the available display surface of a screen

Assessment points

- **Use** the internet to play and watch videos to support our playing and learning
- **Use** the internet to play games to support our playing and learning
- **Use** the internet to play and listen to music to support our playing and learning
- **Use** machines to play and listen to music to support our playing and learning

EYFS Coverage

- Computing is not a discrete area in the EYFS but it underpins all other areas. This unit will enable learning in all other curriculum areas as children play videos, music and games to support their playing and learning.
- This unit will also specifically enhance learning in Expressive Arts and Design:
- Sing a range of well-known nursery rhymes and songs. *Being imaginative and Expressive ELG*
- Perform songs, rhymes… with others and – when appropriate – try to move in time with music. *Being imaginative and Expressive ELG*

Minimum expectations, including for pupils with SEND
With adult support
Children can use the internet to play and watch videos to support our playing and learning. With support, children can navigate through a webpage to that allows choice of activity.

Greater Depth
High prior attainment and extension opportunities, including for pupils with SEND
Use technologies independently to play videos, music and games to support their playing and learning.

Cycle A – Computing – KS1 – Unit 1: Technology Around Us

Objective
To recognise common uses of technology at home and the school environment

I wonder...
How does technology make our life easier?

Substantive Knowledge (Content)

- To know that technology is the use of knowledge to invent new devices or tools
- To know that some types of technology include phones, computers, wheels, and washing machines
- To know that technology helps us by making things faster and more accurate
- To know the main parts of a computer are: central processing unit (CPU), monitor, mouse, keyboard and speakers
- To know how to use some elements of a computer including a mouse and keyboard
- To know we can keep safe when using technology by following e-safety rules
- To know the e-safety rules include reporting anythi8ng you don't like, using passwords, using an online name and not giving out personal information

Prior Learning

EYFS
Children have learnt to use technology to support playing and learning.

LKS2
Children will be learning about connecting computers.

UKS2
Children will be learning about communication and collaboration.

Skills

Using computing systems and networks	Systems, networks and how they are used, the internet, hardware and software
Programming	Interpreting, creating and evaluating algorithms, programming to accomplish specific goals, detecting and correcting errors
Using data and information	Collecting, analysing, evaluating, presenting data and information
Creating media	Design and development, communicating and collaborating online, evaluating online content, respectful and responsible communication, presenting, creating content

Concepts

Responsibility	Being safe online, using social media responsibly and respectfully, privacy, cyberbullying
Similarity and difference	Making comparisons, finding patterns, noting differences and drawing conclusions
Cause and consequence	Inputs and outputs, programming
Significance	Significant inventions, significant figures from the world of computing
Chronology	Changes in technology over time, inventions, future technology
Written and oral expression	Using Computing terminology

Key vocabulary

technology	Something that is designed to help with a task.
computer	An electronic device for working with information
keyboard	Input device with a set of keys which allow you to type letters and numbers.
mouse	Controls the cursor on the screen
click	Push the yellow mouse button
button	
capital letter	
cursor	
double click	
full stop	
home	
school	
screen	
shift key	
space bar	

Assessment points

- **Identify** some types of technology
- **Name** some types of technology in the classroom
- **Explain** how technology helps us
- **Categorise** types of technology
- **Identify** specific keys and buttons on a keyboard and mouse
- **Use** a keyboard and mouse as part of a computer system
- **Use** the keyboard to type their name and edit text
- **Creating** a line of text
- **Evaluating** the choices they have made
- **Identify** ways to keep safe and healthy when using technology

National Curriculum Coverage

- 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

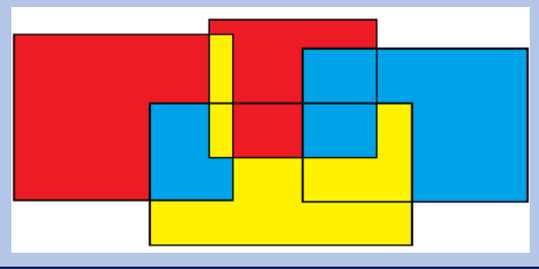
Minimum expectations, including for pupils with SEND
Children to recognise and name some types of technology. They can physically sort objects into two groups. With support (including a name card and phonics/ letter formation mat), they can use a keyboard to write their own name.

High prior attainment and extension opportunities, including for pupils with SEND
Children to think about, discuss and reason what is the best technology to use for specific tasks.

Cycle A – Computing – KS1 – Unit 2: Digital Painting

Objective
To create a picture using a computer

I wonder...
How can we paint using computers?



Substantive Knowledge (Content)

- To know that we can use a computer on my own to create a picture
- To know that freehand tools allow the user to draw either using a spray can, pen, pencil, airbrush, or another painting tool
- To know that there are shape and line tools on a computer that can be used for the picture
- To know that we need to make careful choices when painting a digital picture to create the correct image we want
- To be able to explain why we chose the tools we used
- Tobe able to compare painting on paper to painting a picture on the computer

Prior Learning

EYFS
Children have access to paint programs on the interactive whiteboard and in the computer suite. Children use the pen/ touch screen to create pictures and start to explore the tools available in the program.

Future Learning

LKS2
Children will be learning about photo editing.

UKS2
Children will be learning about vector graphics.

Skills

Using computing systems and networks	Systems, networks and how they are used, the internet, hardware and software
Programming	Interpreting, creating and evaluating algorithms, programming to accomplish specific goals, detecting and correcting errors
Using data and information	collecting, analysing, evaluating, presenting data and information
Creating media	design and development, communicating and collaborating online, evaluating online content, respectful and responsible communication, presenting, creating content

Concepts

Responsibility	Being safe online, using social media responsibly and respectfully, privacy, cyberbullying
Similarity and difference	Making comparisons, finding patterns, noting differences and drawing conclusions
Cause and consequence	Inputs and outputs, programming
Significance	Significant inventions, significant figures from the world of computing
Chronology	Changes in technology over time, inventions, future technology
Written and oral expression	Using Computing terminology

Key vocabulary

tool	Different
shape tools	Used to create different shapes
line tools	To make a straight line
fill	To fill in a shape with one solid colour
undo	To go back a step and reverse an action
brush size	
brush style	
erase	
paintbrush	

Assessment points

- **Use** the paint tools to create a picture in the style of Kandinsky/ Matisse
- **Explain** which tools I used and why they are helpful
- **Use** the shape and line tools to recreate the work of an artist
- **Use** the tools to change the shape, size and colour of the lines I draw
- **Categorise** pictures into computer art and paper art.
- **Evaluate** whether you prefer painting on the computer or using paper

National Curriculum Coverage

- Use technology purposefully to create, organise, store, manipulate and retrieve digital content
- Recognise common uses of information technology beyond school

Minimum expectations, including for pupils with SEND
Children will use the touch screen to select different tools to adapt and make their pictures more interesting. With support, children will create lines and shapes using the mouse.

High prior attainment and extension opportunities
Children will create their own art work using the skills they have learnt and experiment with other available tools on the program.

Cycle A – Computing – KS1 – Unit 3: Moving a Robot

Objective
To program a robot

I wonder...
How can we help the bee bot get home safely?

Substantive Knowledge (Content)

- To know what a given command will do (vocab)
- To be able to act out a given word (e.g. Forwards)
- To be able to combine forwards and backwards commands to make a sequence
- To be able to combine four directional commands to make a sequence
- To know how to plan simple sequence to make the Bee bot move
- To be able to find a solution to a problem using a sequence of planned instructions

Prior Learning

EYFS
The children have had access to bee bots for playing games.

Future Learning

LKS2
Children will be learning about events and action in programs.

UKS2
Children will be learning about variables in games.

Skills

Using computing systems and networks	Systems, networks and how they are used, the internet, hardware and software
Programming	Interpreting, creating and evaluating algorithms, programming to accomplish specific goals, detecting and correcting errors
Using data and information	collecting, analysing, evaluating, presenting data and information
Creating media	design and development, communicating and collaborating online, evaluating online content, respectful and responsible communication, presenting, creating content

Concepts

Responsibility	Being safe online, using social media responsibly and respectfully, privacy, cyberbullying
Similarity and difference	Making comparisons, finding patterns, noting differences and drawing conclusions
Cause and consequence	Inputs and outputs, programming
Significance	Significant inventions, significant figures from the world of computing
Chronology	Changes in technology over time, inventions, future technology
Written and oral expression	Using Computing terminology

Key vocabulary

program	Teach a computer how to do things
commands	Instructions to do something
instructions	A list of commands and directions on how to do something
directions	Which way you will go
bee bot	A robot that looks like a bee
algorithm	
backwards	
clear	
forwards	
go	
plan	
route	
turn	

Assessment points

- **Follow** an instruction and give directions
- **Compare** forwards and backwards movements
- **Experiment** with turn and move commands
- **Predict** the outcome of a sequence involving up to four commands
- **Explain** what my program should do
- **Debug** the program
- **Identify** several possible solutions

National Curriculum Coverage

- 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

Minimum expectations, including for those with SEND
Children will be able to use forwards and backwards movements to program a robot. With support, children will program a robot to change direction (turn).

High prior attainment and extension opportunities, including for pupils with SEND
The children will explain why they chose a particular route (e.g. it was the shortest route) and can explain why a route was unsuccessful.

Cycle A – Computing – KS1 – Unit 4: Grouping Data

Objective
To label and group data according to their properties

I wonder...
How can a mouse help a lost cat?

Substantive Knowledge (Content)

- To know that objects can be labelled
- To be able to identify objects that can be counted
- To be able to describe objects in different ways (e.g. big, small, blue/not blue)
- To be able to count objects with the same properties
- To be able to compare groups of objects (more/ less)
- To be able to answer questions about groups of objects (e.g. which group has fewer?)

Prior Learning

EYFS
Children regularly explore and sort physical objects into groups such as colour and size through the provision available.

Future Learning

LKS2
Children will be learning about branching databases.

UKS2
Children will be learning about spreadsheets.

Skills

Using computing systems and networks	Systems, networks and how they are used, the internet, hardware and software
Programming	Interpreting, creating and evaluating algorithms, programming to accomplish specific goals, detecting and correcting errors
Using data and information	collecting, analysing, evaluating, presenting data and information
Creating media	design and development, communicating and collaborating online, evaluating online content, respectful and responsible communication, presenting, creating content

Concepts

Responsibility	Being safe online, using social media responsibly and respectfully, privacy, cyberbullying
Similarity and difference	Making comparisons, finding patterns, noting differences and drawing conclusions
Cause and consequence	Inputs and outputs, programming
Significance	Significant inventions, significant figures from the world of computing
Chronology	Changes in technology over time, inventions, future technology
Written and oral expression	Using Computing terminology

Key vocabulary

data set	Things that we have sort
property	The colour size or shape of something
object	An item that can be seen or touched
image	Picture of something
label	A name given to a person or thing
fewest/ least	
group	
most	
same	

Assessment points

- **Describe** objects using labels (e.g. rulers, rubbers)
- **Identify** a label for a group of objects (blue/ red)
- **Sort** objects into groups according to their properties (big/ small)
- **Describe** the properties of an object
- **Count** a group of objects
- **Group** objects in more than one way
- **Compare** groups of objects

National Curriculum Coverage

- Use technology purposefully to create, organise, store, manipulate and retrieve digital content
- Use technology safely and respectfully

Minimum expectations, including for pupils with SEND
Children can physically sort objects according to colour and size.
Children can use a computer to sort objects according to their colour and size. With support, children can identify how objects have been sorted. E.g. big and small, Blue and red.

High prior attainment and extension opportunities, Including for pupils with SEND
Children can identify more than one way in which objects may have been sorted. E.g. these are all large but these shapes all have 3 sides. The children begin to reason whether or not another object could be places in the group.

Cycle A – Computing – KS1 – Unit 5: Digital Writing

Objective
To create a poster using a computer

I wonder...
How can you use keys help us to write?

Substantive Knowledge (Content)

- To know that a computer can be used to type text
- To know that text can be added and removed
- To know that text can be changed in size, shape or colour
- To be able to make careful choices when changing text to create the effect wanted
- To be able to explain why we used the tools we chose.
- To be able to compare writing on a computer with writing on paper

Prior Learning

EYFS
Children in EYFS take part in lots of mark making and writing activities, both during child-initiated play and through teacher-led activities.

Future Learning

LKS2
Children will be learning about desktop publishing.

UKS2
Children will be learning about web page creation.

Skills

Using computing systems and networks	Systems, networks and how they are used, the internet, hardware and software
Programming	Interpreting, creating and evaluating algorithms, programming to accomplish specific goals, detecting and correcting errors
Using data and information	collecting, analysing, evaluating, presenting data and information
Creating media	design and development, communicating and collaborating online, evaluating online content, respectful and responsible communication, presenting, creating content

Concepts

Responsibility	Being safe online, using social media responsibly and respectfully, privacy, cyberbullying
Similarity and difference	Making comparisons, finding patterns, noting differences and drawing conclusions
Cause and consequence	Inputs and outputs, programming
Significance	Significant inventions, significant figures from the world of computing
Chronology	Changes in technology over time, inventions, future technology
Written and oral expression	Using Computing terminology

Key vocabulary

word processor	The program we use for typing
toolbar	Where you find all the tools (size, font, etc)
font	The style of the text
bold	Makes the letter stand out/ darker
underline	Puts a line under the word/ letter
backspace	
capital letter	
cursor	
italic	
keyboard	
keys	
letters	
Microsoft Word	
numbers	
space	
text	
undo	

Assessment points

- **Recognise** the keys on a keyboard
- **Identify** and find keys on a keyboard
- **Use** letter, number and space keys
- **Use** the backspace to remove text
- **Use** the shift key to add a capital letter
- **Select** a word by double clicking
- **Select** the whole text by clicking and dragging
- **Change** the font
- **Explain** which tools I used to change the font.
- **Use '**undo' to remove any changes.
- **Evaluate** my decisions
- **Explain** whether or not the changes improved my writing.

National Curriculum Coverage

- Use technology purposefully to create, organise, store, manipulate and retrieve digital content

Minimum expectations, including for pupils with SEND
Children will be given their name card to find each letter on the lower-case keyboard. With support, children will be able to write their name and change the appearance of their writing.

High prior attainment and extension opportunities, including for pupils with SEND
The children can use what they have learnt to add extra text to their poster and extend their writing to include more information and text.

Cycle A – Computing – KS1 – Unit 6: Programming Animations

Objective
To use a program to create an algorithm

I wonder...
What is a sprite?

Substantive Knowledge (Content)

- To know that a chosen command has a given purpose
- To know that a series of commands can be joined together
- To know that changing a value will affect the sequence and command
- To be able to explain that each sprite has its own instructions
- To be able to design the parts of a project
- To be able to use an algorithm to create a program

Prior Learning

EYFS
Positional language in Maths and with bee bots.

Future Learning

LKS2
Children will be learning about repetition in games.

UKS2
Children will be learning about variables in games.

Skills

Using computing systems and networks	Systems, networks and how they are used, the internet, hardware and software
Programming	Interpreting, creating and evaluating algorithms, programming to accomplish specific goals, detecting and correcting errors
Using data and information	collecting, analysing, evaluating, presenting data and information
Creating media	design and development, communicating and collaborating online, evaluating online content, respectful and responsible communication, presenting, creating content

Concepts

Responsibility	Being safe online, using social media responsibly and respectfully, privacy, cyberbullying
Similarity and difference	Making comparisons, finding patterns, noting differences and drawing conclusions
Cause and consequence	Inputs and outputs, programming
Significance	Significant inventions, significant figures from the world of computing
Chronology	Changes in technology over time, inventions, future technology
Written and oral expression	Using Computing terminology

Key vocabulary

programming	Input instructions
algorithm	A clear set of instructions to carry out a task
Scratch Jr	The program we are using
sprite	Character
instructions	Step by step commands
background	
Bee-bot	
command	
compare	
delete	
predict	
reset	
value	

Assessment points

- **Choose** a command to move a sprite
- **Select** and change the background
- **Join** blocks together and run the program
- **Identify** blocks with numbers and change the values
- **Decide** how the sprite will move and select appropriate commands
- **Edit** characters (sprites) into the program
- **Test** and evaluate the program you have created.

National Curriculum Coverage

- 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

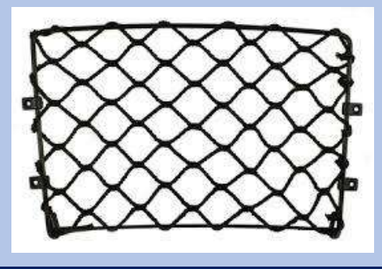
Minimum expectations, including for pupils wit SEND
Position cards to support children to plan their movements.
Children will be able to independently move a sprite across the screen

High prior attainment and extension opportunities, including for pupils with SEND
Children can select their own backgrounds and select an appropriate character to create their own pathways across the screen. Children can evaluate and adapt their commands and explain the reasoning for these changes.

Cycle A – Computing – LKS2 – Unit 1: Connecting Computers

Objective
To develop an understanding of digital devices

I wonder...
What is a network?



Substantive Knowledge (Content)

- To know that a digital device is a piece of physical equipment that uses digital data, such as by sending, receiving, storing or processing it
- To know the four main parts of a digital device are input-output equipment, main memory, control unit, and arithmetic-logic unit
- To know that digital devices help us by enabling us to stay in touch with friends and family and work remotely
- To know that being connected allows information to be shared between users and system
- To know that devices use networks cables, fibre cables and WIFI to connect to digital boxes called routers
- To know that a school network has a server which controls the digital devices and users of the school

Prior Learning

EYFS
Children have been using digital devices.

KS1
Children have been learning about technology around them.

Future Learning

UKS2
Children will continue to develop their knowledge and understanding of computing systems and online collaborative working.

KS3
Children will be learning about the hardware and software components that make up computer systems

Skills

Using computing systems and networks	Systems, networks and how they are used, the internet, hardware and software
Programming	Interpreting, creating and evaluating algorithms, programming to accomplish specific goals, detecting and correcting errors
Using data and information	collecting, analysing, evaluating, presenting data and information
Creating media	design and development, communicating and collaborating online, evaluating online content, respectful and responsible communication, presenting, creating content

Concepts

Responsibility	Being safe online, using social media responsibly and respectfully, privacy, cyberbullying
Similarity and difference	Making comparisons, finding patterns, noting differences and drawing conclusions
Cause and consequence	Inputs and outputs, programming
Significance	Significant inventions, significant figures from the world of computing
Chronology	Changes in technology over time, inventions, future technology
Written and oral expression	Using Computing terminology

Key vocabulary

digital device	Piece of hardware for computers and include any technology which can understand binary code
input	Information that is "put in" to something
process	A series of stages in time
output	What comes out of something
computer network	Connects two or more computers and communication devices
connected	
tool	
information	

Assessment points

- **Recognise** digital devices
- **Identify** input and output devices
- **Select** digital and non-digital tools
- **Use** digital and non-digital tools
- **Compare** digital and non-digital tools
- **Explain** how a computer network can be used to share information
- **Demonstrate** how information can be passed between devices
- **Explain** the benefits of computer networks

National Curriculum Coverage

- Use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- Understand computer networks including the internet; how they can provide multiple services, such as the World Wide Web; and the opportunities they offer for communication and collaboration
- Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information

Minimum expectations, including for pupils with SEND
Children can identify input and output devices. With support, children can explain how networks can be used to share information.

High prior attainment and extension opportunities, including for pupils with SEND
Children to think about and explain how they are connected to the rest of the world.

Cycle A – Computing – LKS2 – Unit 2: Stop-Frame Animation

Objective
To use a range of techniques to create a stop-frame animation

I wonder...
Can a picture move?

Substantive Knowledge (Content)

- To know that animation is the process of giving the illusion of movement to drawings, models, or inanimate objects
- To know that a frame is a single image in a sequence of pictures
- To know that stop-frame animation is animation that is captured one frame at time, with physical objects that are moved between frames
- To be able to create stop-frame animation
- To be able to make small changes between frames by moving objects
- To know how to make animation better by adjustments to timings or objects
- To know that effects can be added to animation to improve the animation
- To be able to add effects to animation

Prior Learning

EYFS
Children have access to paint programs on the interactive whiteboard and in the computer suite. Children use the pen/touch screen to create pictures and start to explore the tools available in the program.

KS1
Children have learnt how to use digital photography.

Future Learning

UKS2
Children will further develop their video editing skills.

KS3
Children will be learning to undertake creative projects that involve selecting, using, and combining multiple applications.

Skills

Using computing systems and networks	Systems, networks and how they are used, the internet, hardware and software
Programming	Interpreting, creating and evaluating algorithms, programming to accomplish specific goals, detecting and correcting errors
Using data and information	collecting, analysing, evaluating, presenting data and information
Creating media	design and development, communicating and collaborating online, evaluating online content, respectful and responsible communication, presenting, creating content

Concepts

Responsibility	Being safe online, using social media responsibly and respectfully, privacy, cyberbullying
Similarity and difference	Making comparisons, finding patterns, noting differences and drawing conclusions
Cause and consequence	Inputs and outputs, programming
Significance	Significant inventions, significant figures from the world of computing
Chronology	Changes in technology over time, inventions, future technology
Written and oral expression	Using Computing terminology

Key vocabulary

animation	Giving the illusion of movement to drawings, models, or inanimate objects
frame	A single image in a sequence of pictures
effects	The result of an action
project	A piece of work that is planned or intended
camera	A digital device for taking pictures
changes	
iPad	
photo	
picture	
move	

Assessment points

- **Recognise** animation
- **Identify** devices used for stop-frame animation
- **Select** an object that can be moved for stop-frame animation
- **Use** a digital device for stop-frame animation
- **Compare** frames effectiveness as part of the animation
- **Explain** how stop-frame animation works
- **Demonstrate** what effects can be added to animation
- **Evaluate** a stop-frame animation project

National Curriculum Coverage

- 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.

Minimum expectations, including for pupils with SEND
Children will use a digital device for stop-frame animation. With support, children can make small changes between frames.

High prior attainment and extension opportunities, , including for pupils with SEND
Children will explore different ways to improve the quality of stop-frame animation.

Cycle A – Computing – LKS2 – Unit 3: Sequencing Sounds

Objective
To explore the concept of sequencing in programming

I wonder...
What sounds can a sprite make?

Substantive Knowledge (Content)

- To know that programming is a language provide the rules for building websites, apps, and other computer-based technologies
- To know that coding tells a machine which actions to perform and how to complete tasks.
- To be able to programme sprites
- To ab able to use sequences as part of coding
- To know that the order of commands is important
- To be able to combine motion and sound
- To be able to create a musical instrument digitally

Prior Learning

EYFS
The children have had access to bee bots for playing games.

KS1
Children have learnt to use simple programming skills to navigate a bee bot.

Future Learning

UKS2
Children will use physical computing to explore the concept of selection in programming.

KS3
Children will use 2 or more programming languages, at least one of which is textual, to solve a variety of computational problems.

Skills

Using computing systems and networks	Systems, networks and how they are used, the internet, hardware and software
Programming	Interpreting, creating and evaluating algorithms, programming to accomplish specific goals, detecting and correcting errors
Using data and information	collecting, analysing, evaluating, presenting data and information
Creating media	design and development, communicating and collaborating online, evaluating online content, respectful and responsible communication, presenting, creating content

Concepts

Responsibility	Being safe online, using social media responsibly and respectfully, privacy, cyberbullying
Similarity and difference	Making comparisons, finding patterns, noting differences and drawing conclusions
Cause and consequence	Inputs and outputs, programming
Significance	Significant inventions, significant figures from the world of computing
Chronology	Changes in technology over time, inventions, future technology
Written and oral expression	Using Computing terminology

Key vocabulary

sequence	A set of related events, movements or items that follow each other in a particular order
programming	Writing a group of instructions for a computer to process
coding	Using a set of instructions to communicate with computers
sprite	Character
command	Being told to do something
motion	
sound	
instrument	
digitally	

Assessment points

- **Recognise** what programming is
- **Identify** parts of coding
- **Select** elements of coding for a purpose
- **Use** coding with a sprite
- **Compare** how the sequence of commands affects the outcome
- **Explain** how to combine motion and sound
- **Demonstrate** how to combine motion and sound
- **Evaluate** the effectiveness of the coding used

National Curriculum Coverage

- Design, write, and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- Use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- Use logical reasoning to explain how some simple algorithms work, and to detect and correct errors in algorithms and programs
- Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information

Minimum expectations, , including for pupils with SEND
Children will be able to use elements of coding with a sprite. With support, children can combine motion and sound using coding.

High prior attainment and extension opportunities, , including for pupils with SEND
Children will explore using code in different ways to extend their understanding and creativity.

Cycle A – Computing – LKS2 – Unit 4: Branching Databases

Objective
To develop an understanding of what a branching database is and how to create one

I wonder...
How can computers use branches?

Substantive Knowledge (Content)

- To know that a branching database is a way of classifying a group of objects
- To know that a branching database works by helping identify the objects by answering questions with either 'yes' or 'no'
- To be able to create a branching database
- To know that it is helpful to structure a database
- To be able to plan a branching database
- To be able to create an identification tool

Prior Learning

EYFS
Children have learnt to use technology to support playing and learning.

KS1
Children have learnt to handle and sort data.

Future Learning

UKS2
Children will be learning how to use flat-file databases.

KS3
Children will use simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming.

Skills

Using computing systems and networks	Systems, networks and how they are used, the internet, hardware and software
Programming	Interpreting, creating and evaluating algorithms, programming to accomplish specific goals, detecting and correcting errors
Using data and information	collecting, analysing, evaluating, presenting data and information
Creating media	design and development, communicating and collaborating online, evaluating online content, respectful and responsible communication, presenting, creating content

Concepts

Responsibility	Being safe online, using social media responsibly and respectfully, privacy, cyberbullying
Similarity and difference	Making comparisons, finding patterns, noting differences and drawing conclusions
Cause and consequence	Inputs and outputs, programming
Significance	Significant inventions, significant figures from the world of computing
Chronology	Changes in technology over time, inventions, future technology
Written and oral expression	Using Computing terminology

Key vocabulary

database	Any collection of data, or information, that is stored in such a way that it can be retrieved
branching database	A way of classifying a group of objects
yes/no	Answers to a question
identification tool	Something that helps identify something
questions	Type of sentence that we ask or write to gain further information from
structure	
real-life	
objects	

Assessment points

- **Recognise** what a database is
- **Identify** a branching database
- **Select** objects to use in a branching database
- **Use** yes/no questions to make a branching database
- **Compare** the structure of branching databases
- **Explain** how a branching database works
- **Explore** how to create an identification tool
- **Evaluate** the effectiveness of their branching database

National Curriculum Coverage

- 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

Minimum expectations, including for pupils with SEND
Children will be able to use a branching database. With support, children can create their own identification tool.

High prior attainment and extension opportunities,, including for pupils with SEND
Children to think about, discuss and identify real-world examples that use branching databases.

Cycle A – Computing – LKS2 – Unit 5: Desktop Publishing

Objective
To use desktop publishing software and consider careful choices

I wonder...
How can I be a desktop publisher?

Substantive Knowledge (Content)

- To know that desktop publishing is the use of personal computers to design books and booklets that are intended to be printed by ink jet or laser printers
- To know that text and images can be used to communicate
- To be able to using editing skills
- To know that a template is a pre-created document that already has some formatting
- To be able to use a template
- To know that page orientation is the way in which a rectangular page is oriented for normal viewing. The two most common types of orientation are portrait and landscape
- To be able to create a template
- To be able to use desktop publishing software
- To know that people use desktop publishing in the real world to create books, magazine, leaflets and other printed items

Prior Learning

EYFS
Children in EYFS take part in lots of mark making and writing activities, both during child-initiated play and through teacher-led activities.

KS1
Children have learnt how to use digital writing.

Future Learning

UKS2
Children will be learning about web page creation.

KS3
Children will be learning to create, reuse, revise and repurpose digital artefacts for a given audience.

Skills

Using computing systems and networks	Systems, networks and how they are used, the internet, hardware and software
Programming	Interpreting, creating and evaluating algorithms, programming to accomplish specific goals, detecting and correcting errors
Using data and information	collecting, analysing, evaluating, presenting data and information
Creating media	design and development, communicating and collaborating online, evaluating online content, respectful and responsible communication, presenting, creating content

Concepts

Responsibility	Being safe online, using social media responsibly and respectfully, privacy, cyberbullying
Similarity and difference	Making comparisons, finding patterns, noting differences and drawing conclusions
Cause and consequence	Inputs and outputs, programming
Significance	Significant inventions, significant figures from the world of computing
Chronology	Changes in technology over time, inventions, future technology
Written and oral expression	Using Computing terminology

Key vocabulary

desktop publishing	The creation of documents using page layout software on a personal computer
software	A program that tells a computer what to do
template	A pattern used as a guide for cutting or drawing
page orientation	The way in which a rectangular page is oriented for normal viewing
edit	To correct, cut, add to, or change
image	
text	
layout	
electronic	
paper-based	
landscape	
portrait	

Assessment points

- **Recognise** what desktop publishing is
- **Identify** elements of desktop publishing
- **Select** different tools for editing content
- **Use** desktop publishing software
- **Compare** different templates used for desktop publishing
- **Explain** how to create a template
- **Explore** different layouts for templates
- **Evaluate** the effectiveness of desktop published content

National Curriculum Coverage

- 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

Minimum expectations, including pupils with SEND
Children will be able to edit existing content using desktop publishing software. With support, children can create a template to use for desktop publishing.

High prior attainment and extension opportunities, including pupils with SEND
Children will explore electronic and paper-based publications to identify any templates.

Cycle A – Computing – LKS2 – Unit 6: Events and Actions in Programs

Objective
To explore the links between events and actions

I wonder...
How can I escape a maze?

Substantive Knowledge (Content)

- To be able to move a sprite using event blocks
- To know that events and actions are linked because events are used to define the triggers when the script should run
- To be able to use the pen tool in Scratch
- To be able to add features to a program
- To know that there are a number of reasons why a program does or doesn't work i.e. the file is too large
- To be able to debug a program
  To be able to create a maze-based challenge

Prior Learning

EYFS
The children have had access to bee bots for playing games.

KS1
Children have learnt to use simple programming skills to navigate a bee bot.

Future Learning

UKS2
Children will use physical computing to explore the concept of selection in programming.

KS3
Children will use 2 or more programming languages, at least one of which is textual, to solve a variety of computational problems.

Skills

Using computing systems and networks	Systems, networks and how they are used, the internet, hardware and software
Programming	Interpreting, creating and evaluating algorithms, programming to accomplish specific goals, detecting and correcting errors
Using data and information	collecting, analysing, evaluating, presenting data and information
Creating media	design and development, communicating and collaborating online, evaluating online content, respectful and responsible communication, presenting, creating content

Concepts

Responsibility	Being safe online, using social media responsibly and respectfully, privacy, cyberbullying
Similarity and difference	Making comparisons, finding patterns, noting differences and drawing conclusions
Cause and consequence	Inputs and outputs, programming
Significance	Significant inventions, significant figures from the world of computing
Chronology	Changes in technology over time, inventions, future technology
Written and oral expression	Using Computing terminology

Key vocabulary

action	A thing that is done
event	Something that happens
sprite	Character
pen tool	A tool used for drawing
coding	Using a set of instructions to communicate with computers
Scratch	
debug	
maze	

Assessment points

- **Recognise** what events and actions are
- **Identify** events and actions
- **Select** actions to use with events
- **Use** the pen tool as part of coding
- **Compare** the success of different programs
- **Explain** how events and actions are linked
- **Demonstrate** how events and actions are linked
- **Evaluate** the effectiveness of the coding used

National Curriculum Coverage

- Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- Use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
- Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information

Minimum expectations, including expectations for pupils with SEND
Children will be able to explain how events and actions are linked. With support, children can use the pen tool in Scratch.

High prior attainment and extension opportunities, including for pupils with SEND
Children will explore using code in different ways to extend their understanding and creativity.

Cycle A – Computing – UKS2 – Unit 1: Systems and Searching

Objective
To develop an understanding of computer systems and how information is transferred between systems and devices

I wonder...
Are all search engines the same?

Substantive Knowledge (Content)

- To know that computers communicate with each other using cables, fibre optics, or wireless signals
- To be able to search the web using a search engine
- To know that a search engine is a software program that helps people find the information they are looking for online using keywords or phrases
- To know that some of the most common search engines are: Google, Bing and Yahoo
- To know that search engines select results using an algorithm to hierarchically rank the relevant pages into a set of results
- To know that a search index is the means by which data is organized and structured so that search engines can generate relevant search results
- To know that search results are ranked based on search term frequency, order, uniqueness, record activity, and access permissions
- To know that searches are influenced by many factors including the user's location, language, device (desktop or phone), and previous queries

Prior Learning

EYFS
Children have been using digital devices.

KS1
Children have been learning about technology around them.

LKS2
Children have been learning about computer networks.

Future Learning

KS3
Children will be learning about the hardware and software components that make up computer systems.

Skills

Using computing systems and networks	Systems, networks and how they are used, the internet, hardware and software
Programming	Interpreting, creating and evaluating algorithms, programming to accomplish specific goals, detecting and correcting errors
Using data and information	collecting, analysing, evaluating, presenting data and information
Creating media	design and development, communicating and collaborating online, evaluating online content, respectful and responsible communication, presenting, creating content

Concepts

Responsibility	Being safe online, using social media responsibly and respectfully, privacy, cyberbullying
Similarity and difference	Making comparisons, finding patterns, noting differences and drawing conclusions
Cause and consequence	Inputs and outputs, programming
Significance	Significant inventions, significant figures from the world of computing
Chronology	Changes in technology over time, inventions, future technology
Written and oral expression	Using Computing terminology

Key vocabulary

search engine	Computer software used to search data
Internet	A network, or system, that connects millions of computers worldwide
index	A system used to make finding information easier
results	To occur or happen as the outcome of action
ranked	To place in order
Google	
influence	
web search	
Bing	

Assessment points

- **Recognise** search engines
- **Identify** the most common search engines
- **Use** a search engine
- **Compare** search results from different search engines
- **Select** ideas to refine a web search
- **Explain** how search results are ranked
- **Evaluate** a search index
- **Explain** how search engines are influenced

National Curriculum Coverage

- 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

Minimum expectations, including for pupils with SEND
Children to know what a search engine is. With support, children can refine searches in a web search.

High prior attainment and extension opportunities, including for pupils with SEND
Children to think about, discuss and reason why we have different search engines.

Cycle A – Computing – UKS2 – Unit 2: Video Production

Objective
To create short videos

I wonder...
How can I make a short video?

Substantive Knowledge (Content)

To know that video is a program, movie, or other visual media product featuring moving images, with or without audio, that is recorded and saved digitally

- To know that filming technique means ways in which the film presents images to the viewer in order to change the audience's perception of them
- To know that a storyboard is a visual outline of a film or animation that helps you plan your video
- To know that you can film using different techniques i.e. camera angle, lighting and sound effects, fade in /out
- To be able to use software to import and edit a video
- To be able to evaluate the final outcome

Prior Learning

EYFS
Children have access to paint programs on the interactive whiteboard and in the computer suite. Children use the pen/touch screen to create pictures and start to explore the tools available in the program.

KS1
Children have learnt how to use digital photography.

LKS2
Children have learnt to use stop-frame animation.

Future Learning

KS3
Children will be learning to undertake creative projects that involve selecting, using, and combining multiple applications.

Skills

Using computing systems and networks	Systems, networks and how they are used, the internet, hardware and software
Programming	Interpreting, creating and evaluating algorithms, programming to accomplish specific goals, detecting and correcting errors
Using data and information	collecting, analysing, evaluating, presenting data and information
Creating media	design and development, communicating and collaborating online, evaluating online content, respectful and responsible communication, presenting, creating content

Concepts

Responsibility	Being safe online, using social media responsibly and respectfully, privacy, cyberbullying
Similarity and difference	Making comparisons, finding patterns, noting differences and drawing conclusions
Cause and consequence	Inputs and outputs, programming
Significance	Significant inventions, significant figures from the world of computing
Chronology	Changes in technology over time, inventions, future technology
Written and oral expression	Using Computing terminology

Key vocabulary

video	A recording of moving pictures and sound
filming technique	Ways in which the film presents images to the viewer
storyboard	A series of illustrations that map out the key events in a story
import	To transfer from one place to another
edit	To change something
camera	
film	
device	
YouTube	
upload	
download	

Assessment points

- **Recognise** what video is
- **Identify** filming techniques
- **Select** filming techniques to use
- **Use** a storyboard to plan a video
- **Use** a video-capture device to record a video
- **Compare** videos taken for suitability
- **Explain** how to import a video
- **Explore** how to edit a video
- **Evaluate** the effectiveness of their video
- **Explain** how a short video is made

National Curriculum Coverage

- 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

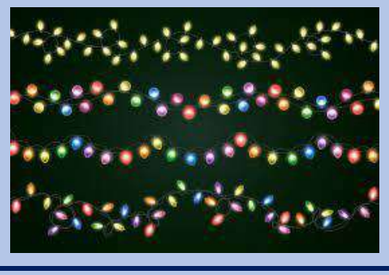
Minimum expectations, including for pupils with SEND
Children will create a storyboard as a plan for a short video. With support, children can record and upload a video.

High prior attainment and extension opportunities, including for pupils with SEND
Children to think about and discuss why we might use different filming techniques.

Cycle A – Computing – UKS2 – Unit 3: Selection in Physical Computing

Objective
To use physical computing to explore the concept of selection in programming

I wonder...
How do Christmas lights flash?



Substantive Knowledge (Content)

- To know that a circuit is a model of computation in which input values proceed through a sequence of gates, each of which computes a function
- To know that a microcontroller is a small computer on a single VLSI integrated circuit (IC) chip that contains one or more CPUs (processor cores) along with memory and programmable input/output peripherals.
- To be able to program a microcontroller
- To know that to write a computer programme with loops you need to repeat a specific block of code over and over
- To know that examples of real life items that use programming include cell phones, laptops, tablets traffic lights, calculators, smart TVs, and cars
- To be able to test and debug a programme but using software and checking for syntax or logic bugs to check the computer can read your code

Prior Learning

EYFS
The children have had access to bee bots for playing games.

KS1
Children have learnt to use simple programming skills to navigate a bee bot.

LKS2
Children have explored the concept of sequencing in programming.

Future Learning

KS3
Children will use 2 or more programming languages, at least one of which is textual, to solve a variety of computational problems.

Skills

Using computing systems and networks	Systems, networks and how they are used, the internet, hardware and software
Programming	Interpreting, creating and evaluating algorithms, programming to accomplish specific goals, detecting and correcting errors
Using data and information	collecting, analysing, evaluating, presenting data and information
Creating media	design and development, communicating and collaborating online, evaluating online content, respectful and responsible communication, presenting, creating content

Concepts

Responsibility	Being safe online, using social media responsibly and respectfully, privacy, cyberbullying
Similarity and difference	Making comparisons, finding patterns, noting differences and drawing conclusions
Cause and consequence	Inputs and outputs, programming
Significance	Significant inventions, significant figures from the world of computing
Chronology	Changes in technology over time, inventions, future technology
Written and oral expression	Using Computing terminology

Key vocabulary

physical computing	Using specialist hardware to interact with the real world
programming	Input instructions
microcontroller	a computer system on a chip that does a job
circuit	A device made of other, smaller electrical devices
objects	Things
lights	
loops	
computer	
real-life	
sequence	

Assessment points

- **Recognise** what a circuit is
- **Identify** a microcontroller
- **Select** components to use with a microcontroller
- **Use** coding to write a program
- **Compare** real life objects that use programming
- **Explain** what a microcontroller does
- **Explore** how selection in coding effects physical computing
- **Evaluate** the effectiveness of their programming

National Curriculum Coverage

- Design, write, and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- Use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
- Select, use, and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems, and content that accomplish given goals, including collecting, analysing, evaluating, and presenting data and information

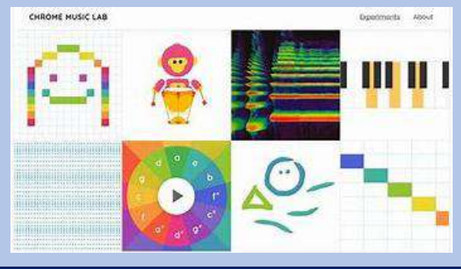
Minimum expectations, including for pupils with SEND
Children to know what a microcontroller is. With support, children can use programming with a microcontroller.

High prior attainment and extension opportunities, including pupils with SEND
Children will explore using code in different ways to extend their understanding and creativity.

Cycle A – Computing – UKS2 – Unit 4: Flat-File Databases

Objective
To organise data in records

I wonder...
How can I book a great holiday?



Substantive Knowledge (Content)

- To know that a data set is a collection of related, discrete items of related data that may be accessed individually or in combination or managed as a whole entity
- To be able to create a data set
- To know that there are similarities and differences between paper-based and electronic databases i.e. paper- based databases can be difficult to carry around while electronic databases can be used / reviewed by multiply users simultaneously
- To know that in a database fields are is a set of data values, of the same data type, in a table (also referred to as a column or an attribute)
- To know that fields are useful so data can be stored and retrieved easily
- To be able to answer questions by grouping and then sorting data
- To know that computers can compare data visually
- To know that for example, banks, restaurants, online shopping sites, hospitals, all use databases to keep track of customer, inventory, employee and accounting information

Prior Learning

EYFS
Children have learnt to use technology to support playing and learning.

KS1
Children have learnt to handle and sort data.

LKS2
Children have learnt to use branching databases.

Future Learning

KS3
Children will use simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming.

Skills

Using computing systems and networks	Systems, networks and how they are used, the internet, hardware and software
Programming	Interpreting, creating and evaluating algorithms, programming to accomplish specific goals, detecting and correcting errors
Using data and information	collecting, analysing, evaluating, presenting data and information
Creating media	design and development, communicating and collaborating online, evaluating online content, respectful and responsible communication, presenting, creating content

Concepts

Responsibility	Being safe online, using social media responsibly and respectfully, privacy, cyberbullying
Similarity and difference	Making comparisons, finding patterns, noting differences and drawing conclusions
Cause and consequence	Inputs and outputs, programming
Significance	Significant inventions, significant figures from the world of computing
Chronology	Changes in technology over time, inventions, future technology
Written and oral expression	Using Computing terminology

Key vocabulary

records	Permanent evidence of information
data set	A collection of data
database	Any collection of data, or information, that is stored in such a way that it can be retrieved
field	A heading used to sort information
search	To look for something
electronic	
paper-based	
compare	
visually	

Assessment points

- **Recognise** what a data set is
- **Identify** a record from a data set
- **Select** fields to use for searching a data set
- **Use** a database to find records
- **Compare** paper-based and electronic databases
- **Explain** how computers can compare data visually
- **Explore** using different fields to narrow answers
- **Evaluate** the effectiveness of different databases

National Curriculum Coverage

- 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

Minimum expectations, including for pupils with SEND
Children will know what a data set is. With support, children can use a database to answer a question.

High prior attainment and extension opportunities, including for pupils with SEND
Children to think about, discuss and identify real-world examples that use flat-file databases.

Cycle A – Computing – UKS2 – Unit 5: Introduction to Vector Graphics

Objective
To use different drawing tools to help create images

I wonder...
How can I make a rainbow cake?

Substantive Knowledge (Content)

- To know that vector drawing creates art using vector graphics. These graphics are points, lines, curves and shapes that are based on mathematical formula
- To know that drawing tools can be used to make a picture using a spray can, pen, pencil, air brush, or another paint tool
- To be able to use lines and shapes to make pictures
- To know that it is important to use the zoom tool in vector drawing. Zooming in allows you to work with more precision. Zooming out allows a wider view.
- To be able to copy part of a drawing
- To be able to group and ungroup objects
- To be able to use layers to create images
- To be able to create a vector drawing

Prior Learning

EYFS
Children have access to paint programs on the interactive whiteboard and in the computer suite. Children use the pen/ touch screen to create pictures and start to explore the tools available in the program.

KS1
Children have learnt how to use digital photography.

LKS2
Children have learnt how to use images as part of desktop publishing.

Future Learning

KS3
Children will be learning to create, reuse, revise and repurpose digital artefacts for a given audience.

Skills

Using computing systems and networks	Systems, networks and how they are used, the internet, hardware and software
Programming	Interpreting, creating and evaluating algorithms, programming to accomplish specific goals, detecting and correcting errors
Using data and information	collecting, analysing, evaluating, presenting data and information
Creating media	design and development, communicating and collaborating online, evaluating online content, respectful and responsible communication, presenting, creating content

Concepts

Responsibility	Being safe online, using social media responsibly and respectfully, privacy, cyberbullying
Similarity and difference	Making comparisons, finding patterns, noting differences and drawing conclusions
Cause and consequence	Inputs and outputs, programming
Significance	Significant inventions, significant figures from the world of computing
Chronology	Changes in technology over time, inventions, future technology
Written and oral expression	Using Computing terminology

Key vocabulary

vector drawing	A type of computer graphic
line	An object that extends without end in both directions
shape	The form of an object or its outline
grouping (ungrouping)	The process of combining in groups (or detaching)
layer	Something lying over or under something else
manipulation	
freehand	
picture	
copy	

Assessment points

- **Recognise** what a vector drawing is
- **Identify** drawing tools that can be used to make a picture
- **Select** objects for copying, grouping and ungrouping
- **Use** a drawing application to create an image
- **Compare** vector and freehand drawings
- **Explain** why people create and use vector drawings
- **Explore** using different tools for manipulation
- **Evaluate** the purpose of vector drawings

National Curriculum Coverage

- 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.

Minimum expectations, including for pupils with SEND
Children will identify elements of vector drawings. With support, children can create a vector drawing.

High prior attainment and extension opportunities, including for pupils with SEND
Children will explore using different manipulation tools and ideas for creating images.

Cycle A – Computing – UKS2 – Unit 6: Selection in Quizzes

Objective
To develop knowledge of how conditions can be used in programs

I wonder...
What makes a good quiz show?

Substantive Knowledge (Content)

- To know that a quiz is a test of knowledge, especially as a competition between individuals or teams as a form of entertainment
- To know that selections and conditions are used to control the flow of actions in a program
- To be able to use an 'if… then… else…' statement
- To know that multiple choice questions work best for quizzes
- To be able to design a quiz
- To be able to test a quiz
- To know that improvements can be made to a quiz

Prior Learning

EYFS
The children have had access to bee bots for playing games.

KS1
Children have learnt to use simple programming skills to navigate a bee bot.

LKS2
Children have explored the concept of sequencing in programming.

Future Learning

KS3
Children will use 2 or more programming languages, at least one of which is textual, to solve a variety of computational problems.

Skills

Using computing systems and networks	Systems, networks and how they are used, the internet, hardware and software
Programming	Interpreting, creating and evaluating algorithms, programming to accomplish specific goals, detecting and correcting errors
Using data and information	collecting, analysing, evaluating, presenting data and information
Creating media	design and development, communicating and collaborating online, evaluating online content, respectful and responsible communication, presenting, creating content

Concepts

Responsibility	Being safe online, using social media responsibly and respectfully, privacy, cyberbullying
Similarity and difference	Making comparisons, finding patterns, noting differences and drawing conclusions
Cause and consequence	Inputs and outputs, programming
Significance	Significant inventions, significant figures from the world of computing
Chronology	Changes in technology over time, inventions, future technology
Written and oral expression	Using Computing terminology

Key vocabulary

conditions	Circumstances or features of something
statement	Something that express a fact, idea or opinion
If, Then, Else	A conditional statement
selection	To pick something from a group
quiz	A test of knowledge consisting of questions
questions	
programming	
debug	
coding blocks	

Assessment points

- **Recognise** why selection programming is used
- **Identify** code that contains example of selection
- **Select** questions to use for a quiz
- **Use** coding to write a quiz
- **Compare** different conditions that can be used in programs
- **Explain** which blocks to use in Scratch for conditional programs
- **Explore** how changing conditions effects a program
- **Evaluate** the effectiveness of existing quizzes

National Curriculum Coverage

- Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- Use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
- Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information

Minimum expectations, including for pupils with SEND
Children to verbally use conditional statements using 'If… then… else…'. With support, children can use coding blocks to apply their verbal condition.

High prior attainment and extension opportunities, including for pupils with SEND
Children will explore using code in different ways to extend their understanding and creativity.