

# Year One Knowledge and Skills by Concept



Digital

## Safety

Understand how to use age-appropriate technology safely, knowing where to go for help if it is needed.

Learn how to use the technologies we have available at school in a safe and respectful way, including asking for help if there is a concern.



Digital

## Programming

Understand that an algorithm is a set of clear and simple instructions.

Learn to use drag-and-drop code blocks.

Understand that changing the order of the instructions can change the end result.

Use hands-on resources such as KUBO Robots to physically demonstrate algorithms and sequences.

Spot where an algorithm has gone wrong by beginning to debug simple programs.



Digital

## Creativity

Use digital technology including photography to better understand the world around us.

Understand that we can edit and adjust photographs to change the way we share information.

Use Logitech Crayons to allow us to directly manipulate content on an iPad screen.

Use text and drawing features to label digital images.

Edit photographs by resizing, cropping and using digital filters to alter the images and change their meaning.



Digital

## Technologies

Recognise common uses of technology, both at and beyond school.

Learn how to use key technologies at school safely and with respect.

Begin to understand that computing devices are connected to larger networks and that we can share content between them.

# Year Two Knowledge and Skills by Concept



Digital

## Safety

Understand how to use age-appropriate technology safely, knowing where to go for help if it is needed.

Understand how to keep personal information private.

Learn how to use the internet safely when searching for information.

Understand that information online comes from many sources and that we must be careful which information we choose to use.



Digital

## Programming

Understand that a computer program is made up of a series of clear and well defined instructions (called algorithms), which will always give the same result each time it is performed.

Understand that there are different ways of creating algorithms using different programs, different languages and different resources.

Use physical computing devices such as KUBO Robots and LEGO WeDo 2.0 to bring algorithms to life.

Predict the behaviour of a given algorithm and begin to identify errors before the code is run.



Digital

## Creativity

More fluently use digital technologies to create, organise, store, manipulate and retrieve digital content.

Learn how to combine digital elements on screen to create larger compositions by adjusting colour, size and angle of resources.

Use the camera to capture scenes from the world around us and integrate them with purely digital creations.

Use Logitech Crayons to allow us to directly manipulate content on an iPad screen.



Digital

## Technologies

Give specific examples of uses of information technology beyond school, giving reasons why this technology has been chosen.

Understand that our devices are connected to the Internet and that we can use them to access information through networks.

Begin to understand that computer networks exist in different forms.

# Year Three Knowledge and Skills by Concept



Digital

## Safety

To understand that behaviour online has real life consequences and that rules for online and offline behaviour should mirror each other.

Begin to understand what information is and isn't safe to share online and how this contributes to a digital footprint.

Understand that passwords exist to protect our digital lives, as long as they are secure.

To know how to seek support if concerned about Online Safety issues and who to talk to for advice.



Digital

## Programming

To understand that different devices and applications use different languages and methods of coding.

Begin to explore more text-based methods of coding.

Use physical computing devices like Sphero Robots and Micro:Bits to test algorithms in real world situations.

Begin to use loops and repeat blocks in sequences to code more efficiently.

Identify errors in simple code, beginning to debug with greater independence.



Digital

## Creativity

Use CAD software to explore modelling and 3D manipulation.

Understand that we can transform 3D digital models into 3D physical models using a 3D printer.

Explain how a 3D printer works and what makes an effective model for printing.

Explore Augmented Reality as a means to merge the real world and the digital world. Create and edit assets that can be used in an AR experience.



Digital

## Technologies

Understand the concept of Input and Output on digital devices, drawing parallels between other devices that you are familiar with.

Understand how data is sent over the internet and how we retrieve information on webpages from servers around the world.

Understand how this global connection enables us to connect in new ways with people and places around the world when used safely.

# Year Four Knowledge and Skills by Concept



Digital

## Safety

Understand that information online is not always correct and that people may try to mislead you for their own benefit.

Understand that internet search results are ranked and arranged in certain ways and how to use search engines effectively.

Understand acceptable and unacceptable behaviour online, including how to report behaviour that you feel is inappropriate.

Learn how to create strong passwords that will protect digital content.



Digital

## Programming

Learn that a variable is a container in which data can be stored, manipulated and retrieved.

Use drag and drop icon-based programming apps such as Scratch to create code, including using variables.

Use logical reasoning to predict and explain bugs in programs.

Connect physical hardware to Scratch using a Bluetooth connection to create complex code for LEGO WeDo 2.0 Robots.

Use Sensors in the LEGO as an input for programs and the motors and light as an output.



Digital

## Creativity

Use a growing variety of apps together to create content that fits a brief.

Learn about animation and how to create graphics that can move in order to tell a story or share information.

Use digital drawing tools along with Logitech Crayons to create pieces of digital art, including text, animations and infographics.

Explore video tools to communicate and share a message.

Use effects like Green Screen to create video which wouldn't be possible to film normally.



Digital

## Technologies

Understand that computers come in many forms and sizes.

Identify which type of computer might be best for a certain purpose.

Consider how robots are also computers and how they are controlled in order to complete certain tasks.

Learn about different methods of connecting devices and peripherals to a computer.

# Year Five Knowledge and Skills by Concept



Digital

## Safety

Explain how the internet provides us with opportunities to share, connect, learn and explore in ways which previous generations did not have.

Learn about how digital content is permanent and how companies can store data on servers indefinitely.

Understand how search engines work and how they arrange content after a search.

Learn about trusted and untrusted sources of information and how to avoid scams and unsafe content.



Digital

## Programming

Use drag and drop text-based programming apps such as Scratch to create increasingly complex code, including If statements and While loops to build programs that can respond to other factors.

Use messages and broadcasts to connect different algorithms together and create interoperability between them.

Control a range of variables and various forms of input and output.

Use logical reasoning to explain bugs in programs written by others across a range of programming languages.



Digital

## Creativity

Learn to combine text, image and diagrams to convey information in a clear and powerful way.

Consider combinations of colour and other style choices to best communicate with a viewer.

Explore Augmented Reality and Video to create powerful experiences to share information with others.

Use audio to tell a story, including applying effects to add depth and interest.



Digital

## Technologies

Understand that different technologies can be connected and combined together to create new outcomes.

Explain how data is sent over the internet and how we retrieve information on webpages from servers around the world.

Understand how this global connection enables us to connect in new ways with people and places around the world when used safely.

# Year Six Knowledge and Skills by Concept



Digital

## Safety

To understand how to search for information effectively on the internet including comparing multiple sources.

To extend knowledge of safer internet use by creating content for younger children to learn from.

Discuss potential risk factors of using the internet and how we might work together to mitigate these.

Learn about using images and other copywriter material in a responsible and legal way.

Understand who to talk to in the event of a problem online and what action can be taken to resolve the situation.



Digital

## Programming

Understand encryption and how decoding encryption works.

Use sensors in code to allow programs to react to different conditions.

Use advanced coding skills techniques including While loops and multiple If functions to create sophisticated programs that accompany specific goals.

Use logical reasoning to unpick how unfamiliar coding languages work and understand what a piece of code could do if executed.



Digital

## Creativity

Use digital technology to carefully and thoughtfully communicate information to others through different mediums.

Use robots to create digital images by using camera techniques and editing to compose an image.

Use music and audio applications, alongside video tools and special effects to create memorable stories with a purpose.

Combine content from a wide variety of applications to create new and dynamic pieces of content.



Digital

## Technologies

To understand new and developing opportunities for communication provided by the internet and how encryption is a key part of ensuring the internet remains secure.

Explain which individual components are required to build a functioning computer.

Explain what different computer components do and how they work together.

Understand that a computer is a tool, not a robot. We are in control and a computer will only ever do what we instruct it to do.