

The scope of computing at Uplands Junior School 2023

As part of the National Curriculum for Computing by the end of KS2, pupils should be taught to:

- Co2 1.1 - design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- Co2 1.2 - use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- Co2 1.3 - use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
- Co2 1.4 - 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
- Co2 1.5 - use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
- Co2 1.6 - 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
- Co2 1.7 - use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

The following computing units are taught throughout lower and upper key stage 2 and progression of skills are shown on separate documents with links to the National Curriculum objectives:

- **Digital Data Handler**
- **Digital Animator**
- **Digital Artist**
- **Digital Broadcaster and Musician**
- **Digital Designer**
- **Digital Film Maker**
- **Digital Programmer**
- **Digital Presenter and Publisher**

Computer Science – Programming, systems and data

Algorithms , programming and systems

Children's skills or sequencing, selecting and repeating increase in complexity throughout the year groups through the delivery of digital programmer units of work in each year group. Concepts and practices covered are: logic and logical thinking, algorithms and algorithmic thinking, patterns and pattern recognition, abstraction and generalisation, evaluation and automation.

Computational thinking at Uplands helps to equip children with the tools to solve problems effectively – with or without a computer and decomposing problems into smaller parts. Children learn how to create specific steps and rules and understand how things work and why they may go wrong.

Children over the year groups are taught how to design, write and debug programs to accomplish specific controls. This includes controlling or simulating physical systems; solve problems by decomposing them into smaller parts. Children use sequence, selection and repetition in programs; work with variables and various forms of input, process and output.

Additional hardware (Sphero Balls) have been purchased and an additional session is to be taught with every class to help embed the teaching and learning of selection in physical computing. Staff have received training

from the external agency Squirrel Learning and this is to applied after the digital programming unit has been taught in each year group.

Knowledge and skills are related to the following national curriculum objectives:

Co2/1.1 Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts

Co2/1.2 Use sequence, selection, and repetition in programs; work with variables and various forms of input and output

Co2/1.3 Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs

Co2/1.4 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

In Year 3, children are introduced to the software Scratch Junior and Scratch as a follow on from the programming software Purple Mash in year 2. Children learn the basic controls with the intended outcome of creating a simple conversation through ordering commands. **(Spring 1)**

In Year 4, children build upon these skills using the software Scratch to create a conversation through count controls (repetition). **(Spring 2)**

In Year 5, children's skills in algorithms and programming increase in complexity through the use of the software Scratch in which children focus on simple blocks (Selection processes). **(Spring 1)**

In Year 6, children are introduced to a new software (Kodu) to program a game with a variety of sequences, selection and repetition. The focus will be on improving games through variables (Counting and numbers) **(Summer 1)**

Data

Pupils learn useful component knowledge to support their understanding of data through digital data handler units taught in years 4 and 5. Children are taught how to use search technologies effectively. By the end of KS2, children will understand how results are selected and ranked, and be discerning in evaluating digital content. They know how to 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.

Knowledge and skills are related to the following national curriculum objectives:

Co2/1.6 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.

In Lower Key Stage 2 children use excel (database) to create a survey in which they analyse data (graphs) through the use of data loggers. **(Year 4 - Summer 2)**

In Upper Key Stage 2, this knowledge and skills is built upon by interpreting and collecting data to make a theme park budget (lined to the Wolverhampton topic – theme park on West Park) **(Year 6 Autumn 2)**

Information Technology

Digital Artefacts

Children use a range of digital artefacts across a range of creative units. The applications which use the appropriate artefact are underpinned by secure component knowledge and develop knowledge in multiple applications. A range of media content is used such as text, images and multimedia.

Knowledge and skills are related to the following national curriculum objectives:

Co2 1.2 - use sequence, selection, and repetition in programs; work with variables and various forms of input and output

Co2 1.4 - 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

Co2 1.5 - use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content

Co2 1.6 - 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

Co2 1.7 - use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

In Year 3, children use a range of digital artefacts in the following units:

Digital research and Presenter – Children develop their skills through digital research, text and images (content) when presenting a non-chronological report using a mindmapping app (Popplet) and create a presentation on Keynote. **(Autumn 1)**

Digital Publisher - Children digitally research and use appropriate content when creating a book using the app Book Creator/Padlet with information about the Ancient Egyptians. **(Autumn 2)**

Digital Artist – Use of images and changing the orientation. **(Spring 2)**

Digital Broadcaster – The use of multimedia (content) where children record, edit and layer audio files to create a digital magazine show. **(Summer 1)**

Digital Designer: The use of images (content) where children design a new, innovative vehicle using different commands and features. **(Summer 2)**

In Year 4, children use a range of digital artefacts in the following units:

Digital Animator – The use of multimedia (content) to create a scene using lego through the application Stop Motion. **(Autumn 1)**

Digital researcher and Presenter – Children will research, use text and images (content) to create an informative Stone Age presentation on Google Slides. **(Autumn 2)**

Digital Film Maker – Children will use a range of multimedia and images (content) to create romance movie trailer using iMovie. **(Spring 1)**

Digital Musician – Children use multimedia (content) to create a rap to record and perform through the software Garage Band. **(Summer 1)**

In Year 5, children use a range of digital artefacts in the following units:

Digital Designer – Children use images (content) to create and modify 3D objects using the software SketchUp **(Autumn 1)**

Digital Broadcaster – Children use a variety of multimedia (content) to create a podcast about WW2 using the software Audacity. **(Autumn 2)**

Digital Publisher – Children use the software Google Sites to create a blog as the daily life of an Anglo-Saxon/Viking, focusing on research, text and images (content). **(Spring 2)**

Digital Researcher and Presenter – Children create tutorials focusing on research and different systems. **(Summer 1)**

Digital Artist – Children will use images (content) with a focus on the software Sketchbook/ipastels . **(Summer 2)**

In Year 6, children use a range of digital artefacts in the following units:

Digital Researcher and Presenter – Children will use the software Adobe Creative Cloud in which they will research, understand the need for a navigation part and apply text and images (content). **(Autumn 2)**

Digital Animator – Children will continue to develop their programming and animation skills (multimedia) through Scratch to animate a suspense story. **(Spring 2)**

Digital Film maker – Multimedia and images (content) . **(Summer 1)**

Digital Musician – Multimedia (content) is used to develop their skills through Garage Band. **(Summer 2)**

Computing Contexts

Children’s knowledge is developed of how computers can be used purposefully both locally and globally. This is done at the beginning of each year in which a Brilliant Basics unit is taught for the first 2/3 weeks dependent on the children’s skills and knowledge. Contexts of how computers and other hardware such as ipads, laptops and chrome books etc can be used is embedded through all Digital Researcher, Presenter and Publisher units of work. Children are also equipped with the knowledge and skills taught during half termly Online Safety units of work (Linked in Unit overviews) in which children are taught how to stay safe online both locally and globally. The online safety, digital researcher, presenter and publisher units of work relate to the following National Curriculum objectives:

- Co2 1.5 - use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
- Co2 1.7 - use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

Digital Literacy

Mechanics

In medium and long term plans, knowledge is identified for what pupils need to use the devices effectively. The mechanics for using devices effectively are highlighted within the following units:

- **Digital Artist**
- **Digital Broadcaster**
- **Digital Designer**
- **Digital Animator**
- **Digital Film Maker**
- **Digital Musician**

The knowledge and skills children need to use the devices correctly are taught explicitly during computing units and discretely through cross curricular links. Children are given the opportunity to practise and refine these skills through other core and foundation subjects.

This relates to the following National Curriculum objectives:

- Co2 1.6 - 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

Searching and selecting information.

All pupils are developing their knowledge of how to search for information effectively. Children are taught during the following online safety units of work (project evolve) about how to search for information effectively and what makes information more or less reliable:

- Managing Online Information
- Online Relationships
- Copyright and Ownership
- Privacy and Security
- Online Reputation

This is embedded through all computing units of work in which e-safety links are made throughout planning and delivery of lessons.

This relates to the following National Curriculum objectives:

- Co2 1.5 - use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
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E-safety

The knowledge of online safety is sufficiently different between the different years and is mapped using knowledge maps. Every class completes the followings units each half term in which planning is pitched appropriately dependent on the children's understanding. Misconceptions are addressed through assessment of learning (Live knowledge maps with specific objectives). This is reflected in the online safety lessons which provide a baseline, planner, impact and progression within each unit. E-safety is embedded through all computing lessons and off-screen based activities.

This relates to the following National Curriculum objectives:

- Co2 1.5 - use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
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