

MILLBROOK PRIMARY SCHOOL COMPUTING 2023/24

By the end of their time at Millbrook Community Primary School our Year 6 children will: • use computational thinking and creativity to understand and change the world; • think and work creatively, analytically and solve problems; • be digitally literate; • use a variety of software and hardware; • understand how to use technology safely and appropriately.

Early Years Foundations Stage Framework and National Curriculum Coverage

| EYFS | Key Stage 1 | Key Stage 2 | |
|---|---|--|-------------------|
| Reception | Year 1 and Year 2 | Year 3 and Year 4 | Year 5 and Year 6 |
| <p>First and foremost, it is important to recognise that there will be no statutory requirement to use and learn about technology in the EYFS. Since the new Early Years Foundation Stage curriculum commenced in September 2021, the ‘Technology’ strand has been removed from ‘Understanding the World’ and has not been replaced with any updated guidance. At Millbrook we believe computing and technology are still vitally important subjects to deliver to Reception children. Not only will teaching a well-planned Computing curriculum ensure that children enter Year 1 with a strong foundation of knowledge, but Computing lessons in the EYFS also ensure that children develop listening skills, problem-solving abilities and thoughtful questioning — as well as improving subject skills across the seven areas of learning.</p> <p>We live in a technological world and there is no escape from the reality that technology is integrated into the lives of young children. Technology is now, and, in all likelihood, will always be in some form or other, a significant part of children’s lives. Just as we ensure the children in our care are ready for the adult world by teaching them maths and literacy, we should also make sure that they are fluent in computer literacy and all-important e-safety. Life is very digital. In reception much of what happens is about helping children to develop their understanding of the world around them and their place within it. At Millbrook we spend time with children exploring relationships, emotion, behaviour and culture in a bid to help them relate to others and understand what happens around them. We feel it is important to help them to understand how technology is used both in school and in their wider lives. It is important that we still talk about the technology we are using with children, answer their questions about technology and continue to include technology within role play areas.</p> | <p>Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.</p> <p>Create and debug simple programs use logical reasoning to predict the behaviour of simple programs.</p> <p>Use technology purposefully to create, organise, store, manipulate and retrieve digital content.</p> <p>Recognise common uses of information technology beyond school.</p> <p>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.</p> | <p>Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.</p> <p>Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.</p> <p>Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.</p> <p>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.</p> <p>Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.</p> <p>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.</p> <p>Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</p> | |

Our school has adapted the Department for Education’s ‘Teach Computing Curriculum for KS1 and KS2’ (<https://teachcomputing.org/>) to reflect our mixed age class structure and need for a two-year rolling computing curriculum. KS1 and KS2 teacher’s use the ‘Teach Computing’ lesson plans to inform their computing planning and meet the needs of the pupils in their class. Lessons have clear learning objectives and key vocabulary is identified. Every lesson includes formative assessment. Summative assessment opportunities are built in across the year. EYFS follow Knowsley Computing Scheme. The Knowsley Computing Scheme is a curriculum that meets the needs and interests of all learners. It contains a range of fun, exciting and creative activities, all based on the essential requirements of the computing program of study. EYFS, KS1 and KS2 have two afternoon sessions per year with a Learning Technologies Officer which cover the three areas of Computing: Computer Science, Information Technology and Digital Literacy.

The Teach Computing Curriculum is a progressive learning curriculum with a recommended, but not prescriptive, teaching order that is structured in units. For these units to be coherent, the lessons within a unit must be taught in order. However, across a year group, the units themselves do not need to be taught in order, with the exception of ‘Programming’ units, where concepts and skills rely on prior learning and experiences. Every unit of work in the Teach Computing Curriculum contains: a unit overview; a learning graph, to show the progression of skills and concepts in a unit; lesson content — including a detailed lesson plan, slides for learners, and all the resources you will need; and formative and summative assessment opportunities. The units for key stages 1 and 2 are based on a spiral curriculum. This means that each of the themes is revisited regularly (at least once in each year group), and pupils revisit each theme through a new unit that consolidates and builds on prior learning within that theme. This style of curriculum design reduces the amount of knowledge lost through forgetting, as topics are revisited yearly. It also ensures that connections are made even if different teachers are teaching the units within a theme in consecutive years.

The general approach to implementing the computing curriculum content for mixed year groups is to teach units for the lower year group in the first three teaching blocks, and units for the higher year group in the last teaching blocks. There are some dependencies between units and where there is a possibility of these units not being taught in order, they have been noted and mitigations have been devised within medium term plans. A benefit of this approach is that both Computing Systems and Networks unit will be taught in one cycle, and both Data and Information units will be taught in the other. 50% of the time, there are dependencies between units in consecutive years of these strands. By teaching both units of each strand in a single cycle, it removes the possibility of some children being taught those units in the incorrect order. The compromise is that each strand will only be taught every other cycle.

Overview of Dependencies within the ‘Teach Computing Curriculum’ and our Curriculum Design:

| No Dependencies | | Dependencies |
|-----------------|--|--|
| Year 1/2 | <ul style="list-style-type: none"> • Unit 1.4 • Unit 1.5 • Unit 2.5 | Unit 1.6 assumes that the core concepts have already been taught in unit 1.3 and compares implementing those concepts using the floor robots and ScratchJr. It is possible to teach the core concepts equally well with both floor robots and ScratchJr so the curriculum will be modified to include the core concepts in both unit 1.3 and unit 1.6, and the contrasting exercise will also be included in both units. This will make the order of delivery less critical, and allow some additional time year 1 students learning the concepts for the first time whilst year 2 students compare with their experience from the previous year/cycle. <ul style="list-style-type: none"> • Unit 2.4 depends on concepts taught in unit 1.4, which is in the same cycle. • Unit 2.6 has a dependency on unit 1.6, which is in the same cycle. |

| | | | |
|--|---|--|---|
| | <div data-bbox="226 188 311 395" style="border: 1px solid black; padding: 2px; text-align: center;">Cycle A</div> <div data-bbox="226 568 311 775" style="border: 1px solid black; padding: 2px; text-align: center;">Cycle B</div> | <p>Unit 1.1 • Unit 1.2 • Unit 1.3 has no dependencies in the curriculum however, it is a dependency of unit 1.6. See the notes for unit 1.6 for details of how this will be managed. • Unit 2.1 • Unit 2.2</p> | <p>Unit 2.3 has a dependency on unit 1.3, which is in the same cycle.</p> |
|--|---|--|---|

| No Dependencies | | Dependencies | |
|-----------------|--|---|---|
| | | <ul style="list-style-type: none"> • Unit 3.4 • Unit 3.5 • Unit 4.3 - it introduces the Logo programming language. • Unit 4.4 • Unit 4.5 | <p>Unit 4.6 has a dependency on unit 4.3. It covers the same concept of repetition but uses the Scratch programming language, and invites students to compare the Scratch and Logo programming languages. The Scratch programming language is used in cycle A so year 4 children will already be familiar with it however, this unit has been modified to introduce Scratch in a similar manner to unit 3.3, but covering the concepts of repetition.</p> |

| | | | |
|-----------------|-------------------------------|--|--|
| <p>Year 3/4</p> | <p>Cycle A</p> <p>Cycle B</p> | <p>Unit 3.1 • Unit 3.2 • Unit 3.3 - it assumes that KS1 has been completed and introduces the Scratch programming language. • Unit 4.2</p> | <p>Unit 3.6 has a dependency on unit 3.3, which is in the same cycle. • Unit 4.1 has a dependency on unit 3.1, which is in the same cycle.</p> |
|-----------------|-------------------------------|--|--|

| No Dependencies | | Dependencies |
|-----------------|---------|---|
| Year 5/6 | Cycle A | <ul style="list-style-type: none"> Unit 5.4 Unit 5.5 Unit 6.4 Unit 6.5 |
| | Cycle B | Unit 5.1 • Unit 5.2 • Unit 5.3 - It introduces microcontrollers and the Crumble programming environment. • Unit 6.1 • Unit 6.2 |
| | | Unit 5.6 has a dependency on unit 5.3. • Unit 6.6 has dependencies on units 5.3/5.6 and 6.3. Unit 5.6 is in the same cycle. The concept of variables will have to be taught in this module so the unit will be modified accordingly |
| | | Unit 6.3 has a dependency on selection which is taught in units 5.3 and 5.6. Unit 5.3 is in the same cycle and the learning from that unit should be sufficient to complete unit 6.3. |

The Teach Computing Curriculum has been developed by the National Centre for Computing Education's (NCCE). All learning outcomes can be described through a high level taxonomy of ten strands, ordered alphabetically as follows: • Algorithms — Be able to comprehend, design, create, and evaluate algorithms • Computer networks — Understand how networks can be used to retrieve and share information, and how they come with associated risks • Computer systems — Understand what a computer is, and how its constituent parts function together as a whole • Creating media — Select and create a range of media including text, images, sounds, and video • Data and information — Understand how data is stored, organised, and used to represent real-world artefacts and scenarios • Design and development — Understand the activities involved in planning, creating, and evaluating computing artefacts • Effective use of tools — Use software tools to support computing work • Impact of technology — Understand how individuals, systems, and society as a whole interact with computer systems • Programming — Create software to allow computers to solve problems • Safety and security — Understand risks when using technology, and how to protect individuals and systems

KS1 and KS2 Two Year Curriculum Cycle – Long Term Plan The curriculum also links with the Education for a Connected World Framework to ensure a high level of online safety skills are developed and progressed throughout pupils' time at Millbrook Community Primary School.

| Cycle A | | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
|---------------------------------|--|-------------------------|----------------------|----------------------------|-------------------------|-------------------------|-------------------------|
| Year 1/2 | | Data and information | Creating media | Programming B | Data and information | Creating media | Programming B |
| | | 1.4 Grouping data | 1.5 Digital Writing | 1.6 Programming animations | 2.4 Pictograms | 2.5 Digital music | 2.6 Programming quizzes |
| Education for a Connected World | | | | | | | |
| | | Copyright and Ownership | Privacy and Security | | Self-image and Identity | Copyright and Ownership | |

| | | | | | | | |
|----------------|----------|--|-------------------------------------|--------------------------|---|-------------------------------------|--------------------------|
| | | | | | Health, Wellbeing and Lifestyle Privacy and Security | | |
| Cycle A | Year 3/4 | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
| | | Data and information | Creating media | Programming A | Data and information | Creating media | Programming B |
| | | 3.4 Branching databases | 3.5 Desktop publishing | 4.3 Repetition in shapes | 4.4 Data logging | 4.5 Photo editing | 4.6 Repetition in games |
| | | Education for a Connected World | | | | | |
| | | Managing Online Information | | Copyright and Ownership | | Self-image and Identity | |
| Cycle A | Year 4/5 | Data and information | Creating media | Programming A | Data and information | Creating media | Programming B |
| | | 4.4 Data logging | 4.5 Photo editing | 4.6 Repetition in games | 5.4 Flat-file databases | 5.5 Introduction to vector graphics | 5.6 Selection in quizzes |
| | | Education for a Connected World | | | | | |
| | | Self-Image and Identity | | Privacy and Security | | Online Bullying | |
| Cycle A | Year 5/6 | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
| | | Computing systems and networks | Creating media | Programming A | Computing systems and networks | Creating media | Programming A |
| | | 5.4 Flat-file databases | 5.5 Introduction to vector graphics | 5.6 Selection in quizzes | 6.4 Introduction to spreadsheets | 6.5 3D modelling | 6.6 Sensing movement |
| | | Education for a Connected World | | | | | |
| | | Managing Information Online | | | Privacy and Security | | |
| | | | | | | | |
| Cycle B | Year 1/2 | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
| | | Computing systems and networks | Creating media | Programming A | Computing systems and networks | Creating media | Programming B |
| | | 1.1 Technology around us | 1.2 Digital painting | 1.3 Moving a robot | 2.1 Information technology around us | 2.2 Digital photography | 2.3 Robot algorithms |
| | | Education for a Connected World | | | | | |
| | | Health, Wellbeing and Lifestyle Copyright and Ownership | | | Health, Wellbeing and Lifestyle | Self-image and Identity | |
| | | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |

| | | | | | | | |
|---------------------------------------|---|---|---|---|---|---|-------------------------------------|
| Cycle B | Year 3/4 | Computing systems and networks | Creating media | Programming A | Computing systems and networks | Creating media | Programming A |
| | | 3.1 Connecting computers | 3.2 Stop-frame animation | 3.3 Sequencing sounds | 4.1 The internet | 4.2 Audio production | 3.6 Events and actions in programs |
| | | Education for a Connected World | | | | | |
| | | | Managing Online Information Copyright and Ownership | | Managing Online Information | Copyright and Ownership | |
| | | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
| | | Data and information | Creating media | | Data and information | Creating media | Programming B |
| | Year 4/5 | 4.1 The internet | 4.2 Audio production | 4.3 Repetition in shapes | 5.1 Systems and searching | 5.2 Video production | 5.3 Selection in physical computing |
| | | Education for a Connected World | | | | | |
| | | | Managing Online Information Copyright and Ownership | | Managing Online Information | Copyright and Ownership | |
| | | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
| Cycle B | Year 5/6 | Data and information | Creating media | Programming B | Data and information | Creating media | Programming B |
| | | 5.1 Systems and searching | 5.2 Video production | 5.3 Selection in physical computing | 6.1 Communication and collaboration | 6.2 Webpage creation | 6.3 Variables in games |
| | | Education for a Connected World | | | | | |
| | | Managing Information Online | | | Online Relationships Copyright and Ownership | Online Relationships Managing Information Online Copyright and Ownership | |
| | Autumn1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 | |
| Reception - Elm | My Online Life My Online Life Planning - Reception (knowsleyclcs.org.uk) | Technology & Me Technology & Me Planning - Reception (knowsleyclcs.org.uk) | Pretty Pictures Pretty Pictures Planning - Reception (knowsleyclcs.org.uk) | Talking Technology Talking Technology Planning - Reception (knowsleyclcs.org.uk) | Nursery Rhyme Coding Nursery-Rhyme-Coding-Planning-Reception.pdf (knowsleyclcs.org.uk) | Beats & Rhythms Beats & Rhythms Planning - Reception (knowsleyclcs.org.uk) | |
| Online Safety Book Focus | Smartie the Penguin Childnet EYFS Story A | Smartie the Penguin Childnet EYFS Story B | Digiduck's Big Decision Childnet | Digiduck's Famous Friend Childnet | Chicken Clicking by Jeanne Willis and Tony Ross #Safer Internet day - YouTube | Detective Digiduck Childnet | |
| Educated for a Connected World | Online Bullying | | Health, Well-being and Lifestyle | | Online Relationships | | |


| | | | | | | |
|--------------------------------------|---|--|---|---|--|---|
| <p>CLC SESSIONS</p> | | <p>Thursday 7th Dec- Shape Hunt I can select and use technology for particular purposes. I can do the basics with technology. I can use a camera. I can discuss the use of technology in the world around me.</p> | | | <p>Thurs 2nd May 2024 - Robots (Simple Algorithms) I can select and use technology for particular purposes. I can explain sequencing. I can explain an algorithm. I can give instructions to a programmable toy.</p> | |
| <p>Reception /Year 1-Pine</p> | <p>My Online Life My Online Life Planning - Reception (knowsleyclcs.org.uk)</p> | <p>What is a computer? In this activity, the children will learn about computers, their different parts and their peripherals. They will learn new digital skills as they work with text and images. The children will create algorithms and programs using Scratch Jr. There are additional continuous provision ideas to try. What is a computer Planning - Year 1 (knowsleyclcs.org.uk) I can use technology to create and present my ideas. I can recognise the ways we use technology in our classroom, my home and community. I can independently debug simple sequence errors in a program. (CS) I can create algorithms that can be turned into a program using a robot or digital device. I can use logical reasoning to predict the outcome of simple programs.</p> | <p>Drawing With Shapes This activity blends art and maths. The children will learn excellent drawing skills and master digital drawing tools while exploring shapes and numbers, following an algorithm and problem-solving. The children will also participate in a QR code scavenger hunt to record and capture data in a tally and simple bar chart. Drawing with Shapes - Planning - Year 1 (knowsleyclcs.org.uk) (IT) I can organise, store and retrieve my digital work. (IT) I can collect and sort data. I can use technology to create and present my ideas. (IT) I can do the basics with an iPad or technology. I can communicate politely via the internet. (Online Relationships).</p> | <p>Robots In this activity, the children will explore robots, computational thinking, sequencing and practice giving instructions to complete tasks. The children will learn new digital skills and create an interactive wall display that uses QR codes. Including a range of continuous provision activities. Robots-Planning-Reception.pdf (knowsleyclcs.org.uk) I can do the basics with technology. (drawing, typing & moving objects). I can explain sequencing. I can explain an algorithm. I can give instructions to a programmable toy. I can select and use technology for particular purposes.</p> | <p>News Presenter In this activity children will become news reporters. They will be given a series of break news stories based on popular traditional tales. The children will film short clips using green screen before sharing/saving their work. News Presenter Year 1 Planning (knowsleyclcs.org.uk) I can do the basics with technology. (IT) I can use technology to create and present my ideas. (IT) I can use technology to create and present my ideas. (IT) I can collect and sort data. (IT) I can organise and store my digital work. (CS) I can follow a simple algorithm.use a search engine. (MS) I can take a good quality photograph and video on an iPad/ digital camera. (DL) I can communicate politely via the internet. (DL) I am aware that content online is owned by the person that created it.</p> | <p>Modern Tales Using the vehicle of the children’s stories, the children will learn to navigate the rules of online safety and communication. The children will learn about web searching, basic keyboard skills and creating digital content. The children will finally make a simple animation based on an online situation they may encounter. Modern Tales Planning - Year 1 (knowsleyclcs.org.uk) (IT) I can use technology to create and present my ideas. (DL) I can recognise the ways we use technology in our classroom, my home and community. (IT) I can organise and store my digital work. (IT) I can collect and sort data. (IT) I can do the basics with</p> |

| | | | | | | |
|---|---|---|--|--|--|---|
| | | | | | | <p>technology. (IT) I can take a good quality photograph and video on an iPad/digital camera.</p> <p>(DL) I know the rules of using technology at home or in school. (DL) I can explain what personal information is and give examples of it.</p> <p>(DL) I can use a search engine.</p> <p>(DL) I can describe how to behave online in ways that do not upset others and can give examples.</p> <p>(DL) I understand something online may upset and know where to find help if anything does</p> |
| CLC SESSIONS | | <p>Thursday 30th Nov- Animal Safari</p> <p>I can select and use technology for particular purposes. I can do the basics with technology. (drawing, typing & moving objects) I can use a camera.</p> | | | <p>Thursday 9th May 2024 – Email me</p> <p>In this unit children will learn about online communication and sending their first email. (DL) I can recognise the ways we use technology in our classroom, my home and community. (DL) I can communicate politely via the internet. (DL) I know the rules of using technology at home or in school. (DL) I can explain what personal information is and give examples of it. (IT) I can use technology to create and present my ideas. (IT) I can organise and store my digital work. (MS) I can do the basics with technology.</p> | |
| <p>Mandatory Skills</p> <p>Age appropriate skills for the use of core devices and applications</p> | <p>I can do the basics with technology.</p> <p>I can use a camera.</p> <p>I can go online.</p> <p>I can discuss the use of technology in the world around me.</p> | <p>I can go online.</p> <p>I can use a search engine.</p> <p>I can discuss the use of technology in the world around me.</p> | <p>I can select and use technology for particular purposes.</p> <p>I can do the basics with technology.</p> <p>I can use a camera.</p> | <p>I can use a search engine.</p> <p>I can discuss the use of technology in the world around me.</p> <p>I can go online.</p> | <p>I can select and use technology for particular purposes.</p> <p>I can explain sequencing.</p> <p>I can explain an algorithm.</p> <p>I can give instructions to a programmable toy.</p> | <p>I can explain sequencing.</p> <p>I can select and use technology for particular purposes.</p> <p>I can do the basics with technology.</p> |

| | | | | | | |
|--|--|---|--|---|--|--|
| <p>within their setting.</p> <p>Digital Literacy/ E-Safety Information Technology Computer Science Mandatory Skill</p> | <p>I understand that people can talk to each other (communication) online. I can use a search engine. I can discuss the rules for staying safe online. I know online content is made and belongs to someone.</p> | <p>I understand that people can talk to each other (communication) online.</p> <p>I can select and use technology for particular purposes. I can do the basics with technology. I can use a camera.</p> | | <p>I can do the basics with technology. I can select and use technology for particular purposes.</p> <p>Robots</p> <p>I can select and use technology for particular purposes.</p> <p>I can explain sequencing. I can explain an algorithm. I can give instructions to a programmable toy.</p> | <p>News Presenter</p> <p>(MS) I can do the basics with technology. (IT) I can use technology to create and present my ideas. (DL) I can use a search engine. (MS) I can take a good quality photograph and video on an iPad/ digital camera. (IT) I can organise and store my digital work. (DL) I can communicate politely via the internet. (IT) I can collect and sort data. (DL) I am aware that content online is owned by the person that created it.</p> | <p>I can select and use technology for particular purposes. I can use a camera.</p> <p>Modern Tales (IT) I can use technology to create and present my ideas. (DL) I can recognise the ways we use technology in our classroom, my home and community. (IT) I can organise and store my digital work. (DL) I can use a search engine. (IT) I can collect and sort data. (DL) I understand something online may upset and know where to find help it anything does. (IT) I can do the basics with technology. (DL) I can describe how to behave online in ways that do not upset others and can give examples. (IT) I can take a good quality photograph and video on an iPad/digital camera. (DL) I know the rules of using technology at home or in school. (DL) I can explain what personal information is and give examples of it.</p> |
| <p>Breadth of Study</p> <p>EYFS</p> | <p>These activities are to support EYFS practitioners in providing a range of Computing/ICT opportunities and experiences for children in the Foundation Stage that provide continuity and stepping stones into the KS1 curriculum. Early Years Computing assessment is based on pupils having the initial skills in place to progress them to the expected attainment at the end of KS1. The 'My Online Life' activity supports one of the key aims of the government's Internet Safety Strategy (Digital Literacy) of supporting children to stay safe and make a positive contribution online, as well enabling teachers to develop effective strategies for understanding and handling online risks. The framework has been produced by the UK Council for Child Internet Safety (UKCCIS). Understanding the World: People and communities, the world and technology. Practitioners should support children in experiencing a range of technologies – using cameras, photocopiers, CD players, tape recorders and programmable toys, in addition to computers. Essential (MS): Age appropriate skills for the use of core devices and applications within their setting. Computer Science (CS): 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</p> | | | | | |

| | | | | | | |
|--|--|---|---|--|---|---|
| | <p>programs. Use logical reasoning to predict the behaviour of simple programs. Information Technology (IT): Use technology purposefully to create, organise, store, manipulate and retrieve digital content. Digital Literacy (DL): Recognise common uses of information technology beyond school. Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.</p> | | | | | |
| Year 1 | <p>Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following a sequence of instructions. Write and test simple programs. Use logical reasoning to predict the behaviour of simple programs. Organise, store, manipulate and retrieve data in a range of digital formats. Communicate safely and respectfully online, keeping personal information private and recognise common uses of information technology beyond school.</p> | | | | | |
| Computing Knowsley CLC Scheme of Work | <p>My Online Life This unit has been developed to improve children's knowledge of the risks of their online lives and to develop skills when using online services. It takes a holistic approach to each element of their online lives. The resources included in this module aim to stimulate classroom discussions about certain situations that may arise online and to get the children to think critically about their online lives. My Online Life Planning - Reception (knowsleyclcs.org.uk)</p> | <p>Technology & Me This unit helps children to understand and explore the technology around them. The children will experience using a digital device to photograph and record videos. They will move and sort objects on a screen, create digital drawings and record audio. Finally, the children will be introduced to keyboards and using the internet to find images. Technology & Me Planning - Reception (knowsleyclcs.org.uk)</p> | <p>Pretty Pictures The children will learn to take photos, edit and share them as they undertake creative tasks. This important skill will enable them to document their learning and ideas. The children will also learn the basic of recording videos and audio to explain their thinking. Key Skills: Photography, using a device safely and audio/video skills. Pretty Pictures Planning - Reception (knowsleyclcs.org.uk)</p> | <p>Talking Technology In this computing activity, the children will learn how to; create a digital drawing, use a search engine to find and save images, record audio and create an animated story. The aim is to develop the children's oracy, imagination and sequencing skills. Essential Skills: Moving objects on a digital device, going online, using a search engine, digital drawing, and animation skills. Talking Technology Planning - Reception (knowsleyclcs.org.uk)</p> | <p>Nursery Rhyme Coding Using the theme of traditional tales, this activity develops computational thinking, such as the sequencing of instructions and promotes core technology skills. This activity is designed to introduce key computing vocabulary e.g. sequencing and algorithm. The children will also learn about using programmable toys, using technology safely/sensibly and working with a partner. Key Skills: Algorithms and IT Skills. Nursery-Rhyme-Coding-Planning-Reception.pdf (knowsleyclcs.org.uk)</p> | <p>Beats & Rhythms The children will explore simple sound and music creation apps to make musical loops based on fairy tale characters. The children will then sequence repeating dance moves to produce their dance routine videos; this introduces sequencing and algorithms. Beats & Rhythms Planning - Reception (knowsleyclcs.org.uk)</p> |
| Online Safety Book Focus | <p>Smartie the Penguin Childnet EYFS Story A</p> | <p>Digiduck's Big Decision Childnet</p> | <p>Smartie the Penguin Childnet Year 1 Book B</p> | <p>Digiduck's Famous Friend Childnet</p> | <p>Chicken Clicking by Jeanne Willis and Tony Ross #Safer Internet day - YouTube</p> | <p>Detective Digiduck Childnet</p> |
| Educated for a Connected World | Online Bullying | | Self-Image and Identity | | Online Relationships | |

| Threshold Concept | Connect | Communicate | Communicate | Communicate | Code | Code |
|-------------------|--|---|---|---|--|--|
| Milestone1 | <p>Understand the online risks and the age rules for sites. Explore Digi duck online safety books (one per term) to keep children safe online. Share online safety newsletter with parents on ClassDojo and encourage parents to attend parent meetings with Knowsley CLC. The children learn the Internet can be used to communicate with others. The children learn simple online safety rules. The children learn people create online content such as video and websites.</p> | <p>Use a range of applications and devices in order to communicate ideas, work and messages. The children learn how to use classroom technology safely and responsibly, including the basic use of a camera and going online. The children learn to type keywords in a search engine (Google). The children learn how to access the web on a classroom device. Show children how to use cameras and ipads to take photos and how to post on their ClassDojo portfolios. Show children how to record videos and allow them to choose an ipad to record when playing. Show children a keyboard and allow them access during role play.</p> | <p>Use a range of applications and devices in order to communicate ideas, work and messages. The children learn how to use classroom technology safely and responsibly, including the basic use of a camera and going online. The children learn to recognise and discuss common uses of information technology in school and outside of school. The children learn how various devices and apps can be used in the classroom. The children can independently choose an application for a particular purpose. E.g drawing a picture.</p> | <p>Use a range of applications and devices in order to communicate ideas, work and messages. The children learn that there are many different types of media content including; sound, images, books, podcasts/audiobooks and video via the web. The children learn to recognise and discuss common uses of information technology in school and outside of school. The children learn to type keywords in a search engine (Google). The children learn how to access the web on a classroom device.</p> | <p>Competence in coding for a variety of practical and inventive purposes, including the application of ideas within other subjects. The children learn that an algorithm is a list of instructions that solves a problem. The children learn to sequence a series of events and explain the importance of sequencing. The children learn through play about action/reaction and will be asked “what do you think will happen?” when using technology or attempting to solve a problem.</p> | <p>Competence in coding for a variety of practical and inventive purposes, including the application of ideas within other subjects. The children learn that an algorithm is a list of instructions that solves a problem. The children learn to sequence a series of events and explain the importance of sequencing. The children learn through play about action/reaction and will be asked “what do you think will happen?” when using technology or attempting to solve a problem.</p> |
| | Autumn1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |

| | | | | | | |
|--|---|--|--|---|---|--|
| <p>Year 1 Cedar Teach Computing curriculum</p>  | <p>Computing systems and networks – Technology around us Computing systems and networks – Technology around us (teachcomputing.org)</p> <p>Develop childrens’ understanding of technology and how it can help them. They will become more familiar with the different components of a computer by developing their keyboard and mouse skills, and also start to consider how to use technology responsibly.</p> | <p>Creating media – Digital painting Creating media – Digital painting (teachcomputing.org)</p> <p>Explore the world of digital art and its exciting range of creative tools with your learners. Empower them to create their own paintings, while getting inspiration from a range of other artists. Conclude by asking them to consider their preferences when painting with, and without, the use of digital devices.</p> | <p>Programming A – Moving a robot Programming A – Moving a robot (teachcomputing.org)</p> <p>This unit introduces learners to early programming concepts. Learners will explore using individual commands, both with other learners and as part of a computer program. They will identify what each floor robot command does and use that knowledge to start predicting the outcome of programs. The unit is paced to ensure time is spent on all aspects of programming and builds knowledge in a structured manner. Learners are also introduced to the early stages of program design through the introduction of algorithms.</p> | <p>Data and Information – Grouping Data Data and information – Grouping data (teachcomputing.org)</p> <p>This unit introduces pupils to data and information. They will begin by using labels to put objects into groups, and labelling these groups. Pupils will demonstrate that they can count a small number of objects, before and after the objects are grouped. They will then begin to demonstrate their ability to sort objects into different groups, based on the properties they choose. Finally, pupils will use their ability to sort objects into different groups to answer questions about data.</p> | <p>Creating media – Digital writing Creating media – Digital writing (teachcomputing.org)</p> <p>Promote your learners’ understanding of the various aspects of using a computer to create and change text. Learners will familiarise themselves with typing on a keyboard and begin using tools to change the look of their writing, and then they will consider the differences between using a computer and writing on paper to create text.</p> | <p>Programming B - Programming animations Programming B - Programming animations (teachcomputing.org)</p> <p>Learners will also be introduced to the early stages of program design through the introduction of algorithms. This unit introduces learners to on-screen programming through ScratchJr. Learners will explore the way a project looks by investigating sprites and backgrounds. They will use programming blocks to use, modify, and create programs. Learners will also be introduced to the early stages of program design through the introduction of algorithms.</p> |
| <p>My Online Life (Knowsley CLC) – My Online Life has been developed to improve children’s knowledge of the risks of their online lives and to develop skills when using online services. It takes a holistic approach to each of the different elements of their online lives. The resources included in this module are aimed at stimulating classroom discussions about certain situations that may arise when online and to get the children to think critically about their online lives. Year 1 to teach one lesson per term over the academic year.</p> | | | | | | |
| <p>Online Safety Book Focus</p> | <p>Smartie the Penguin Childnet Year 1 Book A</p> | <p>Smartie the Penguin Childnet Year 1 Book B</p> | | <p>Digiduck and the Magic Castle Childnet</p> | <p>Digiduck Saves the Day Childnet</p> | <p>Troll Stinks Troll Stinks.pdf</p> |
| <p>Education for a Connected World</p> | | <p>Copyright and Ownership</p> | <p>Privacy and Security</p> | | <p>Self-image and Identity Health, Wellbeing and Lifestyle Privacy and Security</p> | <p>Copyright and Ownership</p> |

| | | | | | | |
|-----------------------------|---|---|--|---|---|---|
| KS1 Breadth of Study | Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following a sequence of instructions. Write and test simple programs. Use logical reasoning to predict the behaviour of simple programs. Organise, store, manipulate and retrieve data in a range of digital formats. Communicate safely and respectfully online, keeping personal information private and recognise common uses of information technology beyond school. | | | | | |
| Progression | As this is a Year 1 unit, no prior knowledge is assumed. This unit progresses students' knowledge and understanding of technology and how they interact with it in school. Learners will build their knowledge of parts of a computer and develop the basic skills needed to effectively use a computer keyboard and mouse. This unit directly precedes the Y2 Computer systems and networks unit, IT around us. | Learners should be familiar with: <ul style="list-style-type: none"> • How to switch their device on • Usernames • Passwords For an introduction to keyboard and mouse skills, learners may benefit from completing the Year 1 Computing Systems & Networks unit prior to this unit. | As this is a Year 1 unit, no prior knowledge is assumed. This unit progresses learners' knowledge and understanding of giving and following instructions. It moves from giving instructions to each other to giving instructions to a robot by programming it. | This unit will introduce learners to data and information. It will introduce learners to the concept of labelling and grouping objects based on their properties. Learners will develop their understanding that objects can be given labels, which is fundamental to their future learning concerning databases and spreadsheets. In addition, learners will begin to improve their ability to use dragging and dropping skills on a device. Following this unit, in year 2, learners will present data graphically in pictograms. | This unit progresses the learners' knowledge and understanding of using computers to create and manipulate digital content, focussing on using a word processor. The learners will develop their ability to find and use the keys on a keyboard in order to create digital content. The learners are then introduced to manipulating the resulting text, making cosmetic changes, and justifying their reason for making these changes. Following this unit, learners will further develop their digital writing skills in the Year 3 – 'Desktop publishing' unit and the Year 6 – 'Web page development' unit. | This unit progresses learners' knowledge and understanding of programming and follows on from 'Programming A – Moving a robot', where children will have learned to program a floor robot using instructions. |

| | | | | | | |
|--|---|---|--|--|---|---|
| <p>National curriculum links</p> | <p>Recognise common uses of information technology beyond school Use technology purposefully to create, organise, store, manipulate, and retrieve digital content. 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.</p> | <p>KS1 Computing Use technology purposefully to create, organise, store, manipulate, and retrieve digital content</p> <p>KS1 Art and Design Pupils should be taught: To develop a wide range of art and design techniques in using colour, pattern, texture, line, shape, form, and space About the work of a range of artists, craft makers, and designers, describing the differences and similarities between different practices and disciplines and making links to their own work</p> | <p>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 Recognise common uses of information technology beyond school</p> | <p>Use technology purposefully to create, organise, store, manipulate, and retrieve digital content Use technology safely and respectfully.</p> | <p>Use technology purposefully to create, organise, store, manipulate, and retrieve digital content Use technology safely and respectfully, keeping personal information private Further national curriculum links English – writing (Y1) Write sentences by: saying out loud what they are going to write about composing a sentence orally before writing it sequencing sentences to form short narratives re-reading what they have written to check that it makes sense.</p> | <p>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.</p> |
| <p>Threshold Concept</p> | <p>Communicate</p> <p>This concept involves using apps to communicate one’s ideas.</p> <p>Connect</p> <p>This concept involves developing an understanding of how to safely connect with others.</p> | <p>Communicate</p> <p>This concept involves using apps to communicate one’s ideas.</p> | <p>Code</p> <p>This concept involves developing an understanding of instructions, logic and sequences.</p> <p>Connect</p> <p>This concept involves developing an understanding of how to safely connect with others.</p> | <p>Collect</p> <p>This concept involves developing an understanding of databases and their uses.</p> <p>Connect</p> <p>This concept involves developing an understanding of how to safely connect with others.</p> | <p>Communicate</p> <p>This concept involves using apps to communicate one’s ideas.</p> <p>Connect</p> <p>This concept involves developing an understanding of how to safely connect with others.</p> | <p>Code</p> <p>This concept involves developing an understanding of instructions, logic and sequences.</p> |
| <p>Milestone 1</p> | <p>Use a range of applications and devices in order to communicate ideas, work and messages.</p> | <p>Use a range of applications and devices in order to communicate ideas, work and messages.</p> | <p>Motion- Control motion by specifying number of steps to travel, direction and turn.</p> | <p>Use simple databases to record information in areas across the curriculum.</p> | <p>Use a range of applications and devices in order to communicate ideas, work and messages.</p> | <p>Motion- Control motion by specifying number of steps to travel, direction and turn.</p> <p>Looks – Add text strings, show and hide objects</p> |

| | | | | | | |
|---------------------------------------|--|--|-------------------|--|----------------------|--|
| | Understand online risks and the age rules for sites. | | | | | <p>and change the features of an object.</p> <p>Sound – Select sounds and control when they are heard, their duration and volume.</p> <p>Draw- Control when drawings appear and set the pen colour, size and shape.</p> <p>Events – Specify user inputs (such as clicks) to control events.</p> <p>Control – Specify the nature of events (such as a single event or loop).</p> <p>Sensing – Create conditions for actions by waiting for a user input (such as responses to questions like: What is your name?).</p> |
| Educated for a Connected World | Online Bullying | | Online Reputation | | Privacy and Security | |

| | | | | | | |
|--|--|--|---|---|--|--|
| <p>Year 1/2 Willow</p> | <p>Data and Information – Grouping Data – Unit 1.4 Data and information – Grouping data (teachcomputing.org) This unit introduces pupils to data and information. They will begin by using labels to put objects into groups, and labelling these groups. Pupils will demonstrate that they can count a small number of objects, before and after the objects are grouped. They will then begin to demonstrate their ability to sort objects into different groups, based on the properties they choose. Finally, pupils will use their ability to sort objects into different groups to answer questions about data.</p> | <p>Creating media – Digital writing – Unit 1.5 Creating media – Digital writing (teachcomputing.org)</p> <p>Promote your learners’ understanding of the various aspects of using a computer to create and change text. Learners will familiarise themselves with typing on a keyboard and begin using tools to change the look of their writing, and then they will consider the differences between using a computer and writing on paper to create text.</p> | <p>Programming B - Programming animations – Unit 1.6 Programming B - Programming animations (teachcomputing.org)</p> <p>Learners will also be introduced to the early stages of program design through the introduction of algorithms. This unit introduces learners to on-screen programming through ScratchJr. Learners will explore the way a project looks by investigating sprites and backgrounds. They will use programming blocks to use, modify, and create programs. Learners will also be introduced to the early stages of program design through the introduction of algorithms.</p> | <p>Data and information – Pictograms – Unit 2.4 Data and information – Pictograms (teachcomputing.org) Learners will begin to understand what the term data means and how data can be collected in the form of a tally chart. They will learn the term ‘attribute’ and use this to help them organise data. They will then progress onto presenting data in the form of pictograms and finally block diagrams. Learners will use the data presented to answer questions.</p> | <p>Creating media - Digital music – Unit 2.5 Creating media - Digital music (teachcomputing.org) In this unit, learners will be using a computer to create music. They will listen to a variety of pieces of music and consider how music can make them think and feel. Learners will compare creating music digitally and non-digitally. Learners will look at patterns and purposefully create music.</p> | <p>Programming B - Programming quizzes- Unit 2.6 Programming B - Programming quizzes (teachcomputing.org) This unit initially recaps on learning from the Year 1 ScratchJr unit ‘Programming B – Programming animations’. Learners begin to understand that sequences of commands have an outcome, and make predictions based on their learning. They use and modify designs to create their own quiz questions in ScratchJr, and realise these designs in ScratchJr using blocks of code. Finally, learners evaluate their work and make improvements to their programming projects.</p> |
| <p>Online Safety Book Focus</p> | <p>Smartie the Penguin Childnet Year 1 Book A</p> | <p>Digiduck and the Magic Castle Childnet</p> | <p>Digiduck Saves the Day Childnet</p> | <p>Troll Stinks Troll Stinks.pdf</p> | <p>Smartie the Penguin Childnet Year 2 Book A</p> | <p>Jessie Friends videos (thinkuknow.co.uk) Watching videos Sharing pictures Playing games</p> |
| <p>Education for a Connected World</p> | | <p>Copyright and Ownership</p> | <p>Privacy and Security</p> | | <p>Self-image and Identity Health, Wellbeing and Lifestyle Privacy and Security</p> | <p>Copyright and Ownership</p> |
| <p>KS1 Breadth of Study</p> | <p>Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following a sequence of instructions. Write and test simple programs. Use logical reasoning to predict the behaviour of simple programs. Organise, store, manipulate and retrieve data in a range of digital formats. Communicate safely and respectfully online, keeping personal information private and recognise common uses of information technology beyond school.</p> | | | | | |
| <p>Progression</p> | <p>This unit will introduce learners to data and information. It will introduce learners to the concept of labelling and grouping objects based on their properties. Learners will develop their understanding that objects can be given labels,</p> | <p>This unit progresses the learners’ knowledge and understanding of using computers to create and manipulate digital content, focussing on using a word processor. The learners will develop their ability to find and use</p> | <p>This unit progresses learners’ knowledge and understanding of programming and follows on from ‘Programming A – Moving a robot’, where children will have learned to</p> | <p>This unit progresses students’ knowledge and understanding of grouping data. It builds on the Year 1 Data and Information unit where learners labelled objects and grouped them</p> | <p>This unit begins the learners’ understanding of how photos are captured and can be manipulated for different purposes. Following this unit, learners will develop their photo editing skills in Year 4.</p> | <p>This unit progresses learners’ knowledge and understanding of instructions in sequences and the use of logical reasoning to predict outcomes.</p> |

| | | | | | | |
|---|--|---|---|--|---|--|
| | <p>which is fundamental to their future learning concerning databases and spreadsheets. In addition, learners will begin to improve their ability to use dragging and dropping skills on a device. Following this unit, in year 2, learners will present data graphically in pictograms.</p> | <p>the keys on a keyboard in order to create digital content. The learners are then introduced to manipulating the resulting text, making cosmetic changes, and justifying their reason for making these changes. Following this unit, learners will further develop their digital writing skills in the Year 3 – 'Desktop publishing' unit and the Year 6 – 'Web page development' unit.</p> | <p>program a floor robot using instructions.</p> | <p>based on different properties. In Year 3 learners develop their understanding of attributes (properties) using branching databases to structure data according to different object attributes.</p> | | |
| <p>National Curriculum Links</p> | <p>Use technology purposefully to create, organise, store, manipulate, and retrieve digital content Use technology safely and respectfully.</p> | <p>Use technology purposefully to create, organise, store, manipulate, and retrieve digital content Use technology safely and respectfully, keeping personal information private Further national curriculum links English – writing (Y1) Write sentences by: saying out loud what they are going to write about composing a sentence orally before writing it sequencing sentences to form short narratives re-reading what they have written to check that it makes sense.</p> | <p>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.</p> | <p>Use technology purposefully to create, organise, store, manipulate, and retrieve digital content. Use technology safely and respectfully.</p> | <p>Use technology purposefully to create, organise, store, manipulate, and retrieve digital content. Recognise common uses of information technology beyond school. Use technology safely and respectfully, keeping personal information private. Art and design To develop a wide range of art and design techniques in using colour, pattern, texture, line, shape, form, and space.</p> | <p>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</p> |
| <p>Threshold Concepts</p> | <p>Collect</p> <p>This concept involves developing an understanding of databases and their uses.</p> <p>Connect</p> <p>This concept involves developing an understanding of how to safely connect with others.</p> | <p>Communicate</p> <p>This concept involves using apps to communicate one's ideas.</p> <p>Connect</p> <p>This concept involves developing an understanding of how to safely connect with others.</p> | <p>Code</p> <p>This concept involves developing an understanding of instructions, logic and sequences.</p> | <p>Collect</p> <p>This concept involves developing an understanding of databases and their uses.</p> <p>Connect</p> <p>This concept involves developing an understanding of how to safely connect with others.</p> | <p>Communicate</p> <p>This concept involves using apps to communicate one's ideas.</p> <p>Connect</p> <p>This concept involves developing an understanding of how to safely connect with others.</p> | <p>Code</p> <p>This concept involves developing an understanding of instructions, logic and sequences.</p> |

| | | | | | | |
|---------------------------------------|--|---|---|--|---|---|
| Milestone 1 | Use simple databases to record information in areas across the curriculum. | Use a range of applications and devices in order to communicate ideas, work and messages. | <p>Motion- Control motion by specifying number of steps to travel, direction and turn.</p> <p>Looks – Add text strings, show and hide objects and change the features of an object.</p> <p>Sound – Select sounds and control when they are heard, their duration and volume.</p> <p>Draw- Control when drawings appear and set the pen colour, size and shape.</p> <p>Events – Specify user inputs (such as clicks) to control events.</p> <p>Control – Specify the nature of events (such as a single event or loop).</p> <p>Sensing – Create conditions for actions by waiting for a user input (such as responses to questions like: What is your name?).</p> | Use simple databases to record information in areas across the curriculum. | Use a range of applications and devices in order to communicate ideas, work and messages. | <p>Motion- Control motion by specifying number of steps to travel, direction and turn.</p> <p>Looks – Add text strings, show and hide objects and change the features of an object.</p> <p>Sound – Select sounds and control when they are heard, their duration and volume.</p> <p>Draw- Control when drawings appear and set the pen colour, size and shape.</p> <p>Events – Specify user inputs (such as clicks) to control events.</p> <p>Control – Specify the nature of events (such as a single event or loop).</p> <p>Sensing – Create conditions for actions by waiting for a user input (such as responses to questions like: What is your name?).</p> |
| Educated for a Connected World | Online Bullying | | Online Reputation | | Self-Image and Identity | |
| Year 2 Cherry | Autumn1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |

| | | | | | | |
|---------------------------------|--|--|---|---|--|---|
| | <p>Computing systems and networks – IT around us Computing systems and networks – IT around us (teachcomputing.org) Learners will develop their understanding of what information technology (IT) is and will begin to identify examples. They will discuss where they have seen IT in school and beyond, in settings such as shops, hospitals, and libraries. Learners will then investigate how IT improves our world, and they will learn about the importance of using IT responsibly.</p> | <p>Creating media – Digital photography Creating media – Digital photography (teachcomputing.org) Learners will learn to recognise that different devices can be used to capture photographs and will gain experience capturing, editing, and improving photos. Finally, they will use this knowledge to recognise that images they see may not be real.</p> | <p>Programming A – Robot algorithms Programming A – Robot algorithms (teachcomputing.org) This unit develops learners' understanding of instructions in sequences and the use of logical reasoning to predict outcomes. Learners will use given commands in different orders to investigate how the order affects the outcome. They will also learn about design in programming. They will develop artwork and test it for use in a program. They will design algorithms and then test those algorithms as programs and debug them.</p> | <p>Data and information – Pictograms Data and information – Pictograms (teachcomputing.org) Learners will begin to understand what the term data means and how data can be collected in the form of a tally chart. They will learn the term 'attribute' and use this to help them organise data. They will then progress onto presenting data in the form of pictograms and finally block diagrams. Learners will use the data presented to answer questions.</p> | <p>Creating media - Digital music Creating media - Digital music (teachcomputing.org) In this unit, learners will be using a computer to create music. They will listen to a variety of pieces of music and consider how music can make them think and feel. Learners will compare creating music digitally and non-digitally. Learners will look at patterns and purposefully create music.</p> | <p>Programming B - Programming quizzes Programming B - Programming quizzes (teachcomputing.org) This unit initially recaps on learning from the Year 1 ScratchJr unit 'Programming B – Programming animations'. Learners begin to understand that sequences of commands have an outcome, and make predictions based on their learning. They use and modify designs to create their own quiz questions in ScratchJr, and realise these designs in ScratchJr using blocks of code. Finally, learners evaluate their work and make improvements to their programming projects.</p> |
| Online Safety Book Focus | Smartie the Penguin Childnet Year 2 Book A | Once Upon a Time ONLINE By David Bedford - YouTube | Smartie the Penguin Childnet Year 2 Book B | Discover how exploring the online world affects young people - Own It - BBC | goldilocks.pdf | Jessie Friends videos (thinkuknow.co.uk) Watching videos Sharing pictures Playing games |
| Education for a Connected World | | Copyright and Ownership | Privacy and Security | | Self-image and Identity Health, Wellbeing and Lifestyle Privacy and Security | Copyright and Ownership |
| KS1 Breadth of Study | Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following a sequence of instructions. Write and test simple programs. Use logical reasoning to predict the behaviour of simple programs. Organise, store, manipulate and retrieve data in a range of digital formats. Communicate safely and respectfully online, keeping personal information private and recognise common uses of information technology beyond school. | | | | | |
| Progression | This unit progresses learners' understanding of technology and how they interact with it. They will develop this understanding to become familiar with the term information technology and will be able to identify common features of IT. This unit also builds on the learners' understanding of using technology safely and responsibly. | This unit begins the learners' understanding of how photos are captured and can be manipulated for different purposes. Following this unit, learners will develop their photo editing skills in Year 4. | In advance of the lessons in this Year 2 unit, learners should have had some experience of creating short programs using floor robots and predicting the outcome of a simple program. This unit progresses learners' knowledge and understanding of algorithms and how they are implemented as programs on | This unit progresses students' knowledge and understanding of grouping data. It builds on the Year 1 Data and Information unit where learners labelled objects and grouped them based on different properties. In Year 3 learners develop their understanding of attributes (properties) using branching databases to | This unit begins the learners' understanding of how photos are captured and can be manipulated for different purposes. Following this unit, learners will develop their photo editing skills in Year 4. | This unit progresses learners' knowledge and understanding of instructions in sequences and the use of logical reasoning to predict outcomes. |

| | | | | | | |
|----------------------------------|---|--|---|---|--|--|
| | | | digital devices. Learners will spend time looking at how the order of commands affects outcomes. Learners will use this knowledge and logical reasoning to trace programs and predict outcomes. | structure data according to different object attributes. | | |
| National Curriculum Links | Use technology purposefully to create, organise, store, manipulate, and retrieve digital content. Recognise common uses of information technology beyond school. Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies. | 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. | 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. Recognise common uses of information technology beyond school | Use technology purposefully to create, organise, store, manipulate, and retrieve digital content. Use technology safely and respectfully. | Use technology purposefully to create, organise, store, manipulate, and retrieve digital content. Recognise common uses of information technology beyond school. Use technology safely and respectfully, keeping personal information private. Art and design To develop a wide range of art and design techniques in using colour, pattern, texture, line, shape, form, and space. | 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 |
| Threshold Concept | Communicate This concept involves using apps to communicate one's ideas. Connect This concept involves developing an understanding of how to safely connect with others. | Communicate This concept involves using apps to communicate one's ideas. | Code This concept involves developing an understanding of instructions, logic and sequences. Connect This concept involves developing an understanding of how to safely connect with others. | Collect This concept involves developing an understanding of databases and their uses. Connect This concept involves developing an understanding of how to safely connect with others. | Communicate This concept involves using apps to communicate one's ideas. Connect This concept involves developing an understanding of how to safely connect with others. | Code This concept involves developing an understanding of instructions, logic and sequences. |
| Milestone 1 | Use a range of applications and devices in order to | Use a range of applications and devices in order to | Motion- Control motion by specifying number of | Use simple databases to record information in areas across the curriculum. | Use a range of applications and devices in order to | Motion- Control motion by specifying number of |

| | | | | | | |
|---------------------------------------|--|--|---|----------|--|--|
| | <p>communicate ideas, work and messages.</p> <p>Understand online risks and the age rules for sites.</p> | <p>communicate ideas, work and messages.</p> | <p>steps to travel, direction and turn.</p> | | <p>communicate ideas, work and messages.</p> | <p>steps to travel, direction and turn.</p> <p>Looks – Add text strings, show and hide objects and change the features of an object.</p> <p>Sound – Select sounds and control when they are heard, their duration and volume.</p> <p>Draw- Control when drawings appear and set the pen colour, size and shape.</p> <p>Events – Specify user inputs (such as clicks) to control events.</p> <p>Control – Specify the nature of events (such as a single event or loop).</p> <p>Sensing – Create conditions for actions by waiting for a user input (such as responses to questions like: What is your name?).</p> |
| Educated for a Connected World | Online Reputation | | Copyright and Ownership | | Self-Image and Identity | Educated for a Connected World |
| Year 3 Maple | Autumn1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |

| | | | | | | |
|---------------------------------------|---|---|--|--|--|---|
| | <p>Computing systems and networks – Connecting computers</p> <p>Computing systems and networks – Connecting computers (teachcomputing.org)</p> <p>Learners will develop their understanding of digital devices, with an initial focus on inputs, processes, and outputs. They will also compare digital and non-digital devices. Next, learners will be introduced to computer networks, including devices that make up a network's infrastructure, such as wireless access points and switches. Finally, learners will discover the benefits of connecting devices in a network.</p> | <p>Creating media - Stop-frame animation</p> <p>Creating media - Stop-frame animation (teachcomputing.org)</p> <p>Learners will use a range of techniques to create a stop-frame animation using tablets. Next, they will apply those skills to create a story-based animation. This unit will conclude with learners adding other types of media to their animation, such as music and text.</p> | <p>Programming A - Sequencing sounds</p> <p>Programming A - Sequencing sounds (teachcomputing.org)</p> <p>This unit explores the concept of sequencing in programming through Scratch. It begins with an introduction to the programming environment, which will be new to most learners. They will be introduced to a selection of motion, sound, and event blocks which they will use to create their own programs, featuring sequences. The final project is to make a representation of a piano. The unit is paced to focus on all aspects of sequences, and make sure that knowledge is built in a structured manner. Learners also apply stages of program design through this unit.</p> | <p>Data and information – Branching databases</p> <p>Data and information – Branching databases (teachcomputing.org)</p> <p>Learners will develop their understanding of what a branching database is and how to create one. They will use yes/no questions to gain an understanding of what attributes are and how to use them to sort groups of objects. Learners will create physical and on-screen branching databases. To conclude the unit, they will create an identification tool using a branching database, which they will test by using it. They will also consider real-world applications for branching databases.</p> | <p>Creating media – Desktop publishing</p> <p>Creating media – Desktop publishing (teachcomputing.org)</p> <p>Learners will become familiar with the terms 'text' and 'images' and understand that they can be used to communicate messages. They will use desktop publishing software and consider careful choices of font size, colour and type to edit and improve premade documents. Learners will be introduced to the terms 'templates', 'orientation', and 'placeholders' and begin to understand how these can support them in making their own template for a magazine front cover. They will start to add text and images to create their own pieces of work using desktop publishing software. Learners will look at a range of page layouts thinking carefully about the purpose of these and evaluate how and why desktop publishing is used in the real world.</p> | <p>Programming B - Events and actions in programs</p> <p>Programming B - Events and actions in programs (teachcomputing.org)</p> <p>This unit explores the links between events and actions, while consolidating prior learning relating to sequencing. Learners begin by moving a sprite in four directions (up, down, left, and right). They then explore movement within the context of a maze, using design to choose an appropriately sized sprite. This unit also introduces programming extensions, through the use of Pen blocks. Learners are given the opportunity to draw lines with sprites and change the size and colour of lines. The unit concludes with learners designing and coding their own maze-tracing program.</p> |
| Online Safety Ebook/Online Activities | Read Out Loud TEK: THE MODERN CAVE BOY - YouTube | | Band Runner 8-10s CEOP Education (thinkuknow.co.uk) | | | |
| KS2 Breadth of Study | Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. Use sequence, selection, and repetition in programs; work with variables and various forms of input and output. Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. Understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration. Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. | | | | | |
| Progression | This unit progresses learners' knowledge and understanding of technology by focusing on digital and non-digital devices, and introducing the concept of computers connected together as a network. Following this unit, learners will explore the internet as a network of networks. | This unit progresses students' knowledge and understanding of using digital devices to create media, exploring how they can create stop-frame animations. Following this unit, learners will further develop their video editing skills in Year 5. | This unit assumes that learners will have some prior experience of programming; the Y1 and Y2 topics cover floor robots and ScratchJr. However, experience of other languages or environments may also be useful. | This unit progresses learners' knowledge and understanding of the categories of data handling, with a particular focus on implementation. It builds on their knowledge of data and information from key stage 1. They will continue to develop their understanding of attributes and begin to | This unit progresses learners' knowledge and understanding of using digital devices to combine text and images building on work from the following units; Digital Writing Year 1 , Digital painting Year 1 , and Digital Photography Year 2 . | This unit assumes that learners will have some prior experience of programming. The key stage 1 National Centre for Computing Education units focus on floor robots and ScratchJr, however experience of other languages or environments may also be useful. The Year 3 — Programming A unit |

| | | | | | | |
|---------------------------|---|---|--|---|--|---|
| | | | | construct and interrogate branching databases as a means of displaying and retrieving information. | | introduces the Scratch programming environment and the concept of sequences. |
| National Curriculum Links | <p>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.</p> <p>Maths (Lesson 1) Number and place value: solve number problems and practical problems involving these ideas.</p> <p>Art (Lesson 3) To improve their mastery of art and design techniques, including drawing, painting and sculpture with a range of materials [for example, pencil, charcoal, paint, clay].</p> | <p>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.</p> <p>English Pupils should be taught to: draft and write by: in narratives, creating settings, characters and plot Pupils should be taught to: proof-read for spelling and punctuation errors.</p> | <p>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.</p> | <p>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.</p> | <p>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.</p> <p>English Pupils should be taught to draft and write by: in non-narrative material, using simple organisational devices [for example, headings and subheadings]. Evaluate and edit by assessing the effectiveness of their own and others' writing and suggesting improvements. Proofread for spelling and punctuation errors.</p> | <p>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.</p> |
| Threshold Concept | <p>Communicate This concept involves using apps to communicate one's ideas. Connect This concept involves developing an understanding of how to safely connect with others.</p> | <p>Communicate This concept involves using apps to communicate one's ideas.</p> | <p>Code This concept involves developing an understanding of instructions, logic and sequences. Connect This concept involves developing an understanding of how to</p> | <p>Collect This concept involves developing an understanding of databases and their uses. Connect This concept involves developing an understanding of how to</p> | <p>Communicate This concept involves using apps to communicate one's ideas. Connect This concept involves developing an understanding of how to safely connect with others.</p> | <p>Code This concept involves developing an understanding of instructions, logic and sequences.</p> |

| | | | | | | |
|---------------------------------------|---|---|--|--|---|--|
| | | | safely connect with others | safely connect with others. | | |
| Milestone 2 | Use some of the advanced features of applications and devices in order to communicate ideas, work or messages professionally. Understand online risks and the age rules for sites. Participate in class social media accounts. | Use some of the advanced features of applications and devices in order to communicate ideas, work or messages professionally. | Understand online risks and the age rules for sites. Use specified screen coordinates to control movement. Set the appearance of objects and create sequences of changes. Create and edit sounds. Control when they are heard, their volume, duration and rests. Control the shade of pens. Specify conditions to trigger events. Use IF THEN conditions to control events or objects. Create conditions for actions by sensing proximity or by waiting for a user input (such as proximity to a specified colour or a line or responses to questions). Use variables to store a value. • Use the functions define, set, change, show and hide to control the variables. • Use the Reporter operators $() + () () - () () * () () / ()$ to perform calculations. | Devise and construct databases using applications designed for this purpose in areas across the curriculum. | Use some of the advanced features of applications and devices in order to communicate ideas, work or messages professionally. | Understand online risks and the age rules for sites. Use specified screen coordinates to control movement. Set the appearance of objects and create sequences of changes. Create and edit sounds. Control when they are heard, their volume, duration and rests. Control the shade of pens. Specify conditions to trigger events. Use IF THEN conditions to control events or objects. Create conditions for actions by sensing proximity or by waiting for a user input (such as proximity to a specified colour or a line or responses to questions). Use variables to store a value. • Use the functions define, set, change, show and hide to control the variables. • Use the Reporter operators $() + () () - () () * () () / ()$ to perform calculations. |
| Educated for a Connected World | Online Bullying | | Health, Well-being and Lifestyle | | Privacy and Security | |
| Year 4 - Holly | Autumn1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
| | Data and information – Branching databases Data and information – Branching databases (teachcomputing.org) Learners will develop their understanding of what a branching database is and how to create one. They will use yes/no questions to gain an understanding of what attributes are and how to use | Creating media – Desktop publishing Creating media – Desktop publishing (teachcomputing.org) Learners will become familiar with the terms ‘text’ and ‘images’ and understand that they can be used to communicate messages. They will use desktop publishing software and consider careful choices of font size, colour and | Programming A – Repetition in shapes Programming A – Repetition in shapes (teachcomputing.org) Learners will create programs by planning, modifying, and testing commands to create shapes and patterns. They will use | Data and information – Data logging Data and information – Data logging (teachcomputing.org) In this unit, learners will consider how and why data is collected over time. Learners will consider the senses that humans use to experience the environment and how computers can use special | Creating media – Photo editing Creating media – Photo editing (teachcomputing.org) Learners will develop their understanding of how digital images can be changed and edited, and how they can then be resaved and reused. They will consider the impact that editing images can have, and evaluate the effectiveness of their choices. | Programming B – Repetition in games Programming B – Repetition in games (teachcomputing.org) Learners will explore the concept of repetition in programming using the Scratch environment. The unit begins with a Scratch activity similar to that carried |

| | | | | | | |
|---|--|--|--|--|--|---|
| | <p>them to sort groups of objects. Learners will create physical and on-screen branching databases. To conclude the unit, they will create an identification tool using a branching database, which they will test by using it. They will also consider real-world applications for branching databases.</p> | <p>type to edit and improve premade documents. Learners will be introduced to the terms ‘templates’, ‘orientation’, and ‘placeholders’ and begin to understand how these can support them in making their own template for a magazine front cover. They will start to add text and images to create their own pieces of work using desktop publishing software. Learners will look at a range of page layouts thinking carefully about the purpose of these and evaluate how and why desktop publishing is used in the real world.</p> | <p>Logo, a text-based programming language. This unit is the first of the two programming units in Year 4, and looks at repetition and loops within programming.</p> | <p>input devices called sensors to monitor the environment. Learners will collect data as well as access data captured over long periods of time. They will look at data points, data sets, and logging intervals. Learners will spend time using a computer to review and analyse data. Towards the end of the unit, learners will pose questions and then use data loggers to automatically collect the data needed to answer those questions.</p> | <p>Throughout this unit, there are opportunities to model with photo editing applications or to demonstrate a concept using the included screen recordings. Pedagogically, it is more beneficial to model the concepts and skills to the learners, which allows for easier questioning and understanding. We recommend that you use the screen recordings to see what needs to be modelled, but give a live demonstration within the lesson. However, the videos are provided on the slides if you wish to use them instead.</p> | <p>out in Logo in Programming unit A, where learners can discover similarities between two environments. Learners look at the difference between count-controlled and infinite loops, and use their knowledge to modify existing animations and games using repetition. Their final project is to design and create a game which uses repetition, applying stages of programming design throughout.</p> |
| <p>Progression</p> | <p>This unit progresses learners’ knowledge and understanding of the categories of data handling, with a particular focus on implementation. It builds on their knowledge of data and information from key stage 1. They will continue to develop their understanding of attributes and begin to construct and interrogate branching databases as a means of displaying and retrieving information</p> | <p>This unit progresses learners’ knowledge and understanding of using digital devices to combine text and images building on work from the following units: Digital Writing Year 1, Digital painting Year 1, and Digital Photography Year 2.</p> | <p>Learners will create programs by planning, modifying, and testing commands to create shapes and patterns. They will use Logo, a text-based programming language. This unit is the first of the two programming units in Year 4, and looks at repetition and loops within programming.</p> | <p>This unit progresses learners’ knowledge and understanding of data and how it can be collected over time to answer questions. Specifically, it builds on the concept of answering questions with data which is first introduced in the KS1 data and information units. The unit also introduces the idea of automatic data collection. Learners are also introduced to data in tables and graphs, knowledge they will build on in the Year 5 unit (flat file databases) and the Year 6 unit (spreadsheets).</p> | <p>This unit progresses students’ knowledge and understanding of digital photography and using digital devices to create media. Following this unit, learners will further develop their image editing skills in Year 5 – Vector drawing.</p> | <p>This unit assumes that learners will have some prior experience of programming. The Year 1 and Year 2 cover floor robots and ScratchJr, and Scratch is introduced in the Year 3 programming units. However, experience of other languages or environments may also be useful.</p> |
| <p>National Curriculum Links</p> | <p>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.</p> | <p>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,</p> | <p>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.</p> | <p>Use sequence, selection, and repetition in programs; work with variables and various forms of input and output. 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</p> | <p>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</p> | <p>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.</p> |

| | | | | | | |
|-------------------|--|---|--|---|--|---|
| | | <p>analysing, evaluating, and presenting data and information.</p> <p>English Pupils should be taught to draft and write by: in non-narrative material, using simple organisational devices [for example, headings and subheadings]. Evaluate and edit by assessing the effectiveness of their own and others' writing and suggesting improvements. Proofread for spelling and punctuation errors.</p> | <p>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.</p> | <p>collecting, analysing, evaluating, and presenting data and information.</p> <p>Science – Lower key stage 2/Year 4 Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. They should learn how to use new equipment, such as data loggers, appropriately. They should collect data from their own observations and measurements, using notes, simple tables and standard units, and help to make decisions about how to record and analyse this data.</p> | <p>acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</p> | <p>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.</p> |
| Threshold Concept | <p>Collect This concept involves developing an understanding of databases and their uses.</p> <p>Connect This concept involves developing an understanding of how to safely connect with others.</p> | <p>Communicate This concept involves using apps to communicate one's ideas.</p> <p>Connect This concept involves developing an understanding of how to safely connect with others.</p> | <p>Code This concept involves developing an understanding of instructions, logic and sequences.</p> <p>Connect This concept involves developing an understanding of how to safely connect with others</p> | <p>Collect This concept involves developing an understanding of databases and their uses.</p> <p>Connect This concept involves developing an understanding of how to safely connect with others.</p> | <p>Communicate This concept involves using apps to communicate one's ideas.</p> <p>Connect This concept involves developing an understanding of how to safely connect with others.</p> | <p>Code This concept involves developing an understanding of instructions, logic and sequences.</p> |
| Milestone 2 | <p>Devise and construct databases using applications designed for this purpose in areas across the curriculum.</p> | <p>Use some of the advanced features of applications and devices in order to communicate ideas, work or messages professionally.</p> | <p>Understand online risks and the age rules for sites. Use specified screen coordinates to control movement. Set the appearance of objects and create sequences of changes. Create and edit sounds. Control when they are heard,</p> | <p>Devise and construct databases using applications designed for this purpose in areas across the curriculum.</p> | <p>Use some of the advanced features of applications and devices in order to communicate ideas, work or messages professionally.</p> | <p>Understand online risks and the age rules for sites. Use specified screen coordinates to control movement. Set the appearance of objects and create sequences of changes. Create and edit sounds. Control when they are heard,</p> |

| | | | | | | |
|--------------------------------|--|--|--|--|---|--|
| | | | <p>their volume, duration and rests.</p> <p>Control the shade of pens. Specify conditions to trigger events.</p> <p>Use IF THEN conditions to control events or objects. Create conditions for actions by sensing proximity or by waiting for a user input (such as proximity to a specified colour or a line or responses to questions).</p> <p>Use variables to store a value. • Use the functions define, set, change, show and hide to control the variables.</p> <p>• Use the Reporter operators () + () () - () () * () () / () to perform calculations.</p> | | | <p>their volume, duration and rests.</p> <p>Control the shade of pens. Specify conditions to trigger events.</p> <p>Use IF THEN conditions to control events or objects. Create conditions for actions by sensing proximity or by waiting for a user input (such as proximity to a specified colour or a line or responses to questions).</p> <p>Use variables to store a value. • Use the functions define, set, change, show and hide to control the variables.</p> <p>• Use the Reporter operators () + () () - () () * () () / () to perform calculations.</p> |
| Educated for a Connected World | Self-image and Identity | | Copyright and Ownership | | Managing Online Information | |
| Year 4/5 - | Autumn1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
| | <p>Data and information – data logging</p> <p>Data and information – Data logging (teachcomputing.org)</p> <p>In this unit, learners will consider how and why data is collected over time. Learners will consider the senses that humans use to experience the environment and how computers can use special input devices called sensors to monitor the environment. Learners will collect data as well as access data captured over long periods of time. They will look at data points, data sets, and logging intervals. Learners will spend time using a computer to review and analyse data. Towards the end of the unit, learners will pose</p> | <p>Creating media – Photo editing</p> <p>Creating media – Photo editing (teachcomputing.org)</p> <p>Learners will develop their understanding of how digital images can be changed and edited, and how they can then be resaved and reused. They will consider the impact that editing images can have, and evaluate the effectiveness of their choices.</p> <p>Throughout this unit, there are opportunities to model with photo editing applications or to demonstrate a concept using the included screen recordings. Pedagogically, it is</p> | <p>Programming B – Repetition in games</p> <p>Programming B – Repetition in games (teachcomputing.org)</p> <p>This unit explores the concept of repetition in programming using the Scratch environment. It begins with a Scratch activity similar to that carried out in Logo in Programming unit A, where learners can discover similarities between two environments. Learners look at the difference between count-controlled and infinite loops, and use their knowledge to modify existing</p> | <p>Data and information – Flat-file databases</p> <p>Data and information – Flat-file databases (teachcomputing.org)</p> <p>This unit looks at how a flat-file database can be used to organise data in records. Learners will use tools within a database to order and answer questions about data. They will create graphs and charts from their data to help solve problems. They will also use a real-life database to answer a question, and present their work to others.</p> | <p>Creating media – Introduction to Vector Graphics</p> <p>Creating media – Introduction to vector graphics (teachcomputing.org)</p> <p>In this unit, learners start to create vector drawings. They learn how to use different drawing tools to help them create images. Learners recognise that images in vector drawings are created using shapes and lines, and each individual element in the drawing is called an object. Learners layer their objects and begin grouping and duplicating them to support the creation of more complex pieces of work.</p> | <p>Programming B – Selection in quizzes</p> <p>Programming B – Selection in quizzes (teachcomputing.org)</p> <p>This unit assumes that learners will have prior experience of programming using block-based construction (e.g. Scratch), understand the concepts of ‘sequence’ and ‘repetition’, and have some experience of using ‘selection’. Ideally, learners will have completed ‘Programming A – Selection in physical computing’ before undertaking this unit, as this will provide them</p> |

| | | | | | | |
|---------------------------|--|--|---|--|---|--|
| | <p>questions and then use data loggers to automatically collect the data needed to answer those questions.</p> | <p>more beneficial to model the concepts and skills to the learners, which allows for easier questioning and understanding. We recommend that you use the screen recordings to see what needs to be modelled, but give a live demonstration within the lesson. However, the videos are provided on the slides if you wish to use them instead.</p> | <p>animations and games using repetition. Their final project is to design and create a game which uses repetition, applying stages of programming design throughout.</p> | | | <p>with the required knowledge of 'selection'.</p> |
| Progression | <p>This unit progresses learners' knowledge and understanding of data and how it can be collected over time to answer questions. Specifically, it builds on the concept of answering questions with data which is first introduced in the KS1 data and information units. The unit also introduces the idea of automatic data collection. Learners are also introduced to data in tables and graphs, knowledge they will build on in the Year 5 unit (flat file databases) and the Year 6 unit (spreadsheets).</p> | <p>This unit progresses students' knowledge and understanding of digital photography and using digital devices to create media. Following this unit, learners will further develop their image editing skills in Year 5 – Vector drawing.</p> | <p>This unit assumes that learners will have some prior experience of programming. The KS1 NCCE units cover floor robots and ScratchJr, and Scratch is introduced in the Year 3 programming units. However, experience of other languages or environments may also be useful.</p> | <p>This unit looks at how a flat-file database can be used to organise data in records. Learners will use tools within a database to order and answer questions about data. They will create graphs and charts from their data to help solve problems. They will also use a real-life database to answer a question, and present their work to others.</p> | <p>This unit progresses learners' knowledge and understanding of digital painting and has some links to the Year 3 'Creating media – Desktop publishing' unit, in which learners used digital images. In this Year 5 unit, learners create images that could be used in desktop publishing documents.</p> | <p>This unit assumes that learners will have prior experience of programming using block-based construction (e.g. Scratch), understand the concepts of 'sequence' and 'repetition', and have some experience of using 'selection'. Ideally, learners will have completed 'Programming A – Selection in physical computing' before undertaking this unit, as this will provide them with the required knowledge of 'selection'.</p> |
| National Curriculum Links | Use sequence, selection, and repetition in | Select, use, and combine a variety of software | Design, write, and debug programs that | Use search technologies | Select, use, and combine a variety of software | design, write and debug programs that |

| | | | | | |
|---|--|---|---|--|--|
| <p>programs; work with variables and various forms of input and output 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</p> <p>Science – Lower key stage 2/Year 4 Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. They should learn how to use new equipment, such as data loggers, appropriately. They should collect data from</p> | <p>(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</p> | <p>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</p> | <p>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</p> | <p>(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.</p> | <p>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</p> |
|---|--|---|---|--|--|

| | | | | | | |
|-------------------|--|--|---|--|--|--|
| | their own observations and measurements, using notes, simple tables and standard units, and help to make decisions about how to record and analyse this data. | | collecting, analysing, evaluating and presenting data and information | | | collecting, analysing, evaluating and presenting data and information |
| Threshold Concept | <p>Collect This concept involves developing an understanding of databases and their uses.</p> <p>Connect This concept involves developing an understanding of how to safely connect with others.</p> | <p>Communicate This concept involves using apps to communicate one's ideas.</p> <p>Connect This concept involves developing an understanding of how to safely connect with others.</p> | <p>Code This concept involves developing an understanding of instructions, logic and sequences.</p> <p>Connect This concept involves developing an understanding of how to safely connect with others</p> | <p>Collect This concept involves developing an understanding of databases and their uses.</p> <p>Connect This concept involves developing an understanding of how to safely connect with others.</p> | <p>Communicate This concept involves using apps to communicate one's ideas.</p> <p>Connect This concept involves developing an understanding of how to safely connect with others.</p> | <p>Code This concept involves developing an understanding of instructions, logic and sequences.</p> |
| Milestones 2/3 | Devise and construct databases using applications designed for this purpose in areas across the curriculum. | Use some of the advanced features of applications and devices in order to communicate ideas, work or messages professionally. | <p>Understand online risks and the age rules for sites.</p> <p>Use specified screen coordinates to control movement.</p> <p>Set the appearance of objects and create sequences of changes.</p> <p>Create and edit sounds.</p> <p>Control when they are heard, their volume, duration and rests.</p> <p>Control the shade of pens.</p> <p>Specify conditions to trigger events.</p> <p>Use IF THEN conditions to control events or objects.</p> <p>Create conditions for actions by sensing proximity or by waiting for a user input (such as proximity to a specified colour or a line or responses to questions).</p> <p>Use variables to store a value. • Use the functions define, set, change, show</p> | Select appropriate applications to devise, construct and manipulate data and present it in an effective and professional manner | Choose the most suitable applications and devices for the purposes of .communication. Use many of the advanced features in order to create high quality, professional or efficient communications. | <p>Set IF conditions for movements. Specify types of rotation giving the number of degrees.</p> <p>Change the position of objects between screen layers (send to back, bring to front).</p> <p>Upload sounds from a file and edit them. Add effects such as fade in and out and control their implementation.</p> <p>Combine the use of pens with movement to create interesting effects.</p> <p>Set events to control other events by 'broadcasting' information as a trigger.</p> <p>Use IF THEN ELSE conditions to control events or objects.</p> <p>Use a range of sensing tools (including proximity, user inputs, loudness and mouse position) to control events or actions.</p> |

and hide to control the variables.
• Use the Reporter operators
() + () () - ()
() * () () / () to perform calculations.

Use lists to create a set of variables.
Use the Boolean operators () < () () = () () > () () and () () or () Not () to define conditions.
Use the Reporter operators () + () () - () () * () () / () to perform calculations. Pick Random () to () Join () () Letter () of () Length of () () Mod () This reports the remainder after a division calculation Round () () of ().

| | | | | | | |
|--|--|---|---|---|--|--|
| | <p>Data and information – Flat-file databases Data and information – Flat-file databases (teachcomputing.org)</p> <p>This unit looks at how a flat-file database can be used to organise data in records. Learners will use tools within a database to order and answer questions about data. They will create graphs and charts from their data to help solve problems. They will also use a real-life database to answer a question, and present their work to others.</p> | <p>Creating media – Introduction to vector graphics Creating media – Introduction to vector graphics (teachcomputing.org)</p> <p>In this unit, learners start to create vector drawings. They learn how to use different drawing tools to help them create images. Learners recognise that images in vector drawings are created using shapes and lines, and each individual element in the drawing is called an object. Learners layer their objects and begin grouping and duplicating them to support the creation of more complex pieces of work.</p> | <p>Programming B – Selection in quizzes Programming B – Selection in quizzes (teachcomputing.org)</p> <p>Learners will develop their knowledge of ‘selection’ by revisiting how ‘conditions’ can be used in programming, and then learning how the ‘if... then... else...’ structure can be used to select different outcomes depending on whether a condition is ‘true’ or ‘false’. They represent this understanding in algorithms, and then by constructing programs in the Scratch programming environment. They learn how to write programs that ask questions and use selection to control the outcomes based on the answers given. They use this knowledge to design a quiz in response to a given task and implement it as a program. To conclude the unit, learners evaluate their program by identifying how it meets the requirements of the task, the ways they have improved it, and further ways it could be improved.</p> | <p>Data and information - Introduction to Spreadsheets Data and information - Introduction to Spreadsheets (teachcomputing.org)</p> <p>This unit introduces the learners to spreadsheets. They will be supported in organising data into columns and rows to create their own data set. Learners will be taught the importance of formatting data to support calculations, while also being introduced to formulas and will begin to understand how they can be used to produce calculated data. Learners will be taught how to apply formulas that include a range of cells, and apply formulas to multiple cells by duplicating them. Learners will use spreadsheets to plan an event and answer questions. Finally, learners will create charts, and evaluate their results in comparison to questions asked.</p> | <p>Creating media – 3D Modelling Creating media – 3D Modelling (teachcomputing.org)</p> <p>Learners will develop their knowledge and understanding of using a computer to produce 3D models. Learners will initially familiarise themselves with working in a 3D space, moving, resizing, and duplicating objects. They will then create hollow objects using placeholders and combine multiple objects to create a model of a desk tidy. Finally, learners will examine the benefits of grouping and ungrouping 3D objects, then go on to plan, develop, and evaluate their own 3D model of a building.</p> <p>For this sequence of lessons, learners will be using Tinkercad (https://www.tinkercad.com), a web-based 3D modelling application. Learners will need accounts to save their work and access the resources. We recommend signing up for a teacher account at https://www.tinkercad.com/join, which enables learner accounts to be created and the website accessed with a class code. For guidance on setting up your class, please visit https://www.tinkercad.com/teach. Please ensure your school’s online safety policy is considered when creating accounts.</p> | <p>Programming B - Sensing movement Programming B - Sensing movement (teachcomputing.org)</p> <p>This unit is the final KS2 programming unit and brings together elements of all the four programming constructs: sequence from Year 3, repetition from Year 4, selection from Year 5, and variables (introduced in Year 6 – ‘Programming A’). It offers pupils the opportunity to use all of these constructs in a different, but still familiar environment, while also utilising a physical device — the micro:bit. The unit begins with a simple program for pupils to build in and test within the new programming environment, before transferring it to their micro:bit. Pupils then take on three new projects in Lessons 2, 3, and 4, with each lesson adding more depth.</p> <p>Design features prominently in this unit. A design template is introduced in Lesson 3, initially scaffolded to give pupils the opportunity to create code from a given design. In Lesson 4 that scaffolding is gradually reduced, then in Lesson 5, pupils create their own design, using the same template. In the final lesson, pupils will apply their knowledge of the programming constructs and use their design to create their own micro:bit-based step counter.</p> |
|--|--|---|---|---|--|--|

| | | | | | | |
|---------------------------|---|---|---|--|---|---|
| | | | | | | <p>There are two Year 6 programming units:</p> <ul style="list-style-type: none"> • Programming A – Variables in games • Programming B – Sensing <p>This is unit B, which should be delivered after unit A.</p> |
| Progression | <p>This unit progresses learners' knowledge and understanding of why and how information might be stored in a database, and looks at how tools within a database can help us to answer questions about our data. It moves on to demonstrate how a database can help us display data visually, and how real-life databases can be used to help us solve problems. Finally, the learners create a presentation showing understanding and application of all the tools used within the unit.</p> | <p>This unit progresses learners' knowledge and understanding of digital painting and has some links to the Year 3 'Creating media – Desktop publishing' unit, in which learners used digital images. In this Year 5 unit, learners create images that could be used in desktop publishing documents.</p> | <p>This unit assumes that learners will have prior experience of programming using block-based construction (e.g. Scratch), understand the concepts of 'sequence' and 'repetition', and have some experience of using 'selection'. Ideally, learners will have completed 'Programming A – Selection in physical computing' before undertaking this unit, as this will provide them with the required knowledge of 'selection'.</p> | <p>This unit progresses students' knowledge and understanding of data, and teaches them how to organise and modify data within spreadsheets. Specifically, learners will have experienced data in tables and charts in the Y4 data logging and Y5 branching database units.</p> | <p>This unit progresses students' knowledge and understanding of creating 3D graphics using a computer. Prior to undertaking this unit, learners should have worked with 2D graphics applications.</p> | <p>This unit presumes that pupils are already confident in their understanding of sequence, repetition and selection independently within programming. If pupils are not yet ready for this, you may wish to revisit earlier programming units where these constructs are introduced.</p> |
| National Curriculum Links | <p>Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.</p> <p>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.</p> | <p>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.</p> | <p>Design, write, and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.</p> <p>Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.</p> <p>Use logical reasoning to explain how some simple algorithms work, and to detect and correct errors in algorithms and programs.</p> <p>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</p> | <p>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</p> <p>National curriculum maths links</p> <p>Number – addition, subtraction, multiplication, and division: Solve problems involving addition, subtraction, multiplication, and division</p> <p>Statistics:</p> | <p>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</p> <p>Use technology safely, respectfully, and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact</p> <p>Art and design – KS2 To improve their mastery of art and design techniques, including drawing, painting, and sculpture with a range of materials</p> | <p>Design, write, and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</p> <p>Use sequence, selection, and repetition in programs; work with variables and various forms of input and output</p> <p>Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</p> <p>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</p> |

| | | | | | | |
|-------------------|--|--|---|--|---|---|
| | | | content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. | Interpret and construct pie charts and line graphs, and use these to solve problems Calculate and interpret the mean as an average | <p>Design and technology – KS2 Generate, develop, model, and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design</p> <p>Mathematics – KS2 (Y6) Recognise, describe, and build simple 3D shapes, including making nets</p> | content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information |
| Threshold Concept | <p>Collect This concept involves developing an understanding of databases and their uses.</p> <p>Connect This concept involves developing an understanding of how to safely connect with others.</p> | <p>Communicate This concept involves using apps to communicate one’s ideas.</p> <p>Connect This concept involves developing an understanding of how to safely connect with others.</p> | <p>Code This concept involves developing an understanding of instructions, logic and sequences.</p> | <p>Collect This concept involves developing an understanding of databases and their uses.</p> <p>Connect This concept involves developing an understanding of how to safely connect with others.</p> | <p>Communicate This concept involves using apps to communicate one’s ideas.</p> <p>Connect This concept involves developing an understanding of how to safely connect with others.</p> | <p>Code This concept involves developing an understanding of instructions, logic and sequences.</p> |
| Milestone 3 | Select appropriate applications to devise, construct and manipulate data and present it in an effective and professional manner | Choose the most suitable applications and devices for the purposes of .communication. Use many of the advanced features in order to create high quality, professional or efficient communications. | Set IF conditions for movements. Specify types of rotation giving the number of degrees. Change the position of objects between screen layers (send to back, bring to front). Upload sounds from a file and edit them. Add effects such as fade in and out and control their implementation. Combine the use of pens with movement to create interesting effects. Set events to control other events by ‘broadcasting’ information as a trigger. Use IF THEN ELSE conditions to control events or objects. | Select appropriate applications to devise, construct and manipulate data and present it in an effective and professional manner | Choose the most suitable applications and devices for the purposes of .communication. Use many of the advanced features in order to create high quality, professional or efficient communications. | Set IF conditions for movements. Specify types of rotation giving the number of degrees. Change the position of objects between screen layers (send to back, bring to front). Upload sounds from a file and edit them. Add effects such as fade in and out and control their implementation. Combine the use of pens with movement to create interesting effects. Set events to control other events by ‘broadcasting’ information as a trigger. Use IF THEN ELSE conditions to control events or objects. |

Use a range of sensing tools (including proximity, user inputs, loudness and mouse position) to control events or actions.
Use lists to create a set of variables.
Use the Boolean operators `()` `< ()` `= ()` `> ()` `and() ()` `or() Not()` to define conditions.
Use the Reporter operators `() + ()` `() - ()` `() * ()` `() / ()` to perform calculations. Pick `Random ()` to `Join ()` `Letter () of ()` `Length of ()` `Mod ()` This reports the remainder after a division calculation `Round ()` `of ()`.

Use a range of sensing tools (including proximity, user inputs, loudness and mouse position) to control events or actions.
Use lists to create a set of variables.
Use the Boolean operators `()` `< ()` `= ()` `> ()` `and() ()` `or() Not()` to define conditions.
Use the Reporter operators `() + ()` `() - ()` `() * ()` `() / ()` to perform calculations. Pick `Random ()` to `Join ()` `Letter () of ()` `Length of ()` `Mod ()` This reports the remainder after a division calculation `Round ()` `of ()`.

| Education for a Connected World | Managing Information Online | | | Privacy and Security | Managing Information Online | |
|---------------------------------|--|--|--|---|--|---|
| Year 6 Sycamore | | | | | | |
| | <p>Computing systems and networks - Communication and collaboration Computing systems and networks - Communication and collaboration (teachcomputing.org)</p> <p>In this unit learners explore how data is transferred over the internet. Learners initially focus on addressing, before they move on to the makeup and structure of data packets. Learners then look at how the internet facilitates online communication and collaboration; they complete shared projects online and evaluate different methods of communication. Finally, they learn how to communicate responsibly by considering what should and should not be shared on the internet.</p> | <p>Creating media – Web page creation Creating media – Web page creation (teachcomputing.org)</p> <p>Learners will be introduced to creating websites for a chosen purpose. Learners identify what makes a good web page and use this information to design and evaluate their own website using Google Sites. Throughout the process, learners pay specific attention to copyright and fair use of media, the aesthetics of the site, and navigation paths.</p> <p>It is recommended that learners use laptop or desktop computers for this unit of work. The unit has been based on the use of Google Sites, which is free to use with any Google account. If your school uses the free Google Workspace for Education, your Google administrator can create accounts for pupils and also ensure that the Google Sites feature is enabled. If you don't have a school Google Workspace account, your school may choose to set one up or you may opt to create individual Google accounts for your learners to use. Whichever option you choose, it should be in line with your school's policies.</p> | <p>Programming A – Variables in games Programming A – Variables in games (teachcomputing.org)</p> <p>This unit explores the concept of variables in programming through games in Scratch. First, learners find out what variables are and relate them to real-world examples of values that can be set and changed. Then they use variables to create a simulation of a scoreboard. In Lessons 2, 3, and 5, which follow the Use-Modify-Create model, learners experiment with variables in an existing project, then modify them, before they create their own project. In Lesson 4, learners focus on design. Finally, in Lesson 6, learners apply their knowledge of variables and design to improve their games in Scratch.</p> | <p>Data and information - Introduction to Spreadsheets Data and information - Introduction to Spreadsheets (teachcomputing.org)</p> <p>This unit introduces the learners to spreadsheets. They will be supported in organising data into columns and rows to create their own data set. Learners will be taught the importance of formatting data to support calculations, while also being introduced to formulas and will begin to understand how they can be used to produce calculated data. Learners will be taught how to apply formulas that include a range of cells, and apply formulas to multiple cells by duplicating them. Learners will use spreadsheets to plan an event and answer questions. Finally, learners will create charts, and evaluate their results in comparison to questions asked.</p> | <p>Creating media – 3D Modelling Creating media – 3D Modelling (teachcomputing.org)</p> <p>Learners will develop their knowledge and understanding of using a computer to produce 3D models. Learners will initially familiarise themselves with working in a 3D space, moving, resizing, and duplicating objects. They will then create hollow objects using placeholders and combine multiple objects to create a model of a desk tidy. Finally, learners will examine the benefits of grouping and ungrouping 3D objects, then go on to plan, develop, and evaluate their own 3D model of a building.</p> <p>For this sequence of lessons, learners will be using Tinkercad (https://www.tinkercad.com), a web-based 3D modelling application. Learners will need accounts to save their work and access the resources. We recommend signing up for a teacher account at https://www.tinkercad.com/join, which enables learner accounts to be created and the website accessed with a class code. For guidance on setting up your class, please visit https://www.tinkercad.com/teach. Please ensure your school's online safety policy is considered when creating accounts.</p> | <p>Programming B - Sensing movement Programming B - Sensing movement (teachcomputing.org)</p> <p>This unit is the final KS2 programming unit and brings together elements of all the four programming constructs: sequence from Year 3, repetition from Year 4, selection from Year 5, and variables (introduced in Year 6 – 'Programming A'). It offers pupils the opportunity to use all of these constructs in a different, but still familiar environment, while also utilising a physical device — the micro:bit. The unit begins with a simple program for pupils to build in and test within the new programming environment, before transferring it to their micro:bit. Pupils then take on three new projects in Lessons 2, 3, and 4, with each lesson adding more depth.</p> <p>Design features prominently in this unit. A design template is introduced in Lesson 3, initially scaffolded to give pupils the opportunity to create code from a given design. In Lesson 4 that scaffolding is gradually reduced, then in Lesson 5, pupils create their own design, using the same template. In the final lesson, pupils will apply their knowledge of the programming constructs and use their design to create</p> |

| | | | | | | |
|---------------------------|---|---|---|--|--|--|
| | | | | | | <p>their own micro:bit-based step counter.</p> <p>There are two Year 6 programming units:</p> <ul style="list-style-type: none"> • Programming A – Variables in games • Programming B – Sensing <p>This is unit B, which should be delivered after unit A.</p> |
| Progression | This unit progresses learners' knowledge and understanding of computing systems and online collaborative working. | This unit progresses students' knowledge and understanding of the following: digital writing, digital painting, desktop publishing, digital photography, photo editing, and vector drawing. | This unit assumes that learners have some prior experience of programming in Scratch. Specifically, they should be familiar with the programming constructs of sequence, repetition, and selection. These constructs are covered in the Year 3, 4, and 5 National Centre for Computing Education programming units respectively. Each year group includes at least one unit that focuses on Scratch. | This unit progresses students' knowledge and understanding of data, and teaches them how to organise and modify data within spreadsheets. Specifically, learners will have experienced data in tables and charts in the Y4 data logging and Y5 branching database units. | This unit progresses students' knowledge and understanding of creating 3D graphics using a computer. Prior to undertaking this unit, learners should have worked with 2D graphics applications. | This unit presumes that pupils are already confident in their understanding of sequence, repetition and selection independently within programming. If pupils are not yet ready for this, you may wish to revisit earlier programming units where these constructs are introduced. |
| National Curriculum Links | 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. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways | 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. | 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 | 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 National curriculum maths links Number – addition, subtraction, multiplication, and division: Solve problems involving addition, subtraction, multiplication, and division | 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 Art and design – KS2 To improve their mastery of art and design techniques, including | 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 |

| | | | | | | |
|-------------------|---|---|--|---|--|--|
| | to report concerns about content and contact. | English links Writing composition: Identifying the audience for and purpose of the writing, selecting the appropriate form, and using other similar writing as models for their own. | and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information | Statistics: Interpret and construct pie charts and line graphs, and use these to solve problems Calculate and interpret the mean as an average | drawing, painting, and sculpture with a range of materials Design and technology – KS2 Generate, develop, model, and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design Mathematics – KS2 (Y6) Recognise, describe, and build simple 3D shapes, including making nets | and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information |
| Threshold Concept | Communicate This concept involves using apps to communicate one's ideas. Connect This concept involves developing an understanding of how to safely connect with others. | Communicate This concept involves using apps to communicate one's ideas. | Code This concept involves developing an understanding of instructions, logic and sequences. Connect This concept involves developing an understanding of how to safely connect with others | Collect This concept involves developing an understanding of databases and their uses. Connect This concept involves developing an understanding of how to safely connect with others. | Communicate This concept involves using apps to communicate one's ideas. Connect This concept involves developing an understanding of how to safely connect with others. | Code This concept involves developing an understanding of instructions, logic and sequences. |
| Milestone 3 | Choose the most suitable applications and devices for the purposes of communication. Use many of the advanced features in order to create high quality, professional or efficient communications. Collaborate with others online on sites approved and moderated by teachers. Give examples of the risks of online communities and demonstrate knowledge of how to minimise risk and report problems. Understand and demonstrate knowledge that it is illegal to download copyrighted material, including music or games, without express written permission, from the copyright holder. Understand the effect of | Choose the most suitable applications and devices for the purposes of communication. • Use many of the advanced features in order to create high quality, professional or efficient communications. | Collaborate with others online on sites approved and moderated by teachers. Give examples of the risks of online communities and demonstrate knowledge of how to minimise risk and report problems. Understand and demonstrate knowledge that it is illegal to download copyrighted material, including music or games, without express written permission, from the copyright holder. Understand the effect of online comments and show responsibility and sensitivity when online. | Select appropriate applications to devise, construct and manipulate data and present it in an effective and professional manner | Choose the most suitable applications and devices for the purposes of .communication. Use many of the advanced features in order to create high quality, professional or efficient communications. | Set IF conditions for movements. Specify types of rotation giving the number of degrees. Change the position of objects between screen layers (send to back, bring to front). Upload sounds from a file and edit them. Add effects such as fade in and out and control their implementation. Combine the use of pens with movement to create interesting effects. Set events to control other events by 'broadcasting' information as a trigger. |

| | | | | | | |
|--|---|--|--|--|--|---|
| | <p>online comments and show responsibility and sensitivity when online. Understand how simple networks are set up and used.</p> | | <p>Understand how simple networks are set up and used. Set IF conditions for movements. Specify types of rotation giving the number of degrees. Change the position of objects between screen layers (send to back, bring to front). Upload sounds from a file and edit them. Add effects such as fade in and out and control their implementation. Combine the use of pens with movement to create interesting effects. Set events to control other events by 'broadcasting' information as a trigger. Use IF THEN ELSE conditions to control events or objects. Use a range of sensing tools (including proximity, user inputs, loudness and mouse position) to control events or actions. Use lists to create a set of variables. Use the Boolean operators () < () = () > () and() ()or() Not() to define conditions. Use the Reporter operators () + () - () * () / () to perform calculations. Pick Random () to () Join () () Letter () of () Length of () () Mod () This reports the remainder after a division calculation Round () () of ().</p> | | | <p>Use IF THEN ELSE conditions to control events or objects. Use a range of sensing tools (including proximity, user inputs, loudness and mouse position) to control events or actions. Use lists to create a set of variables. Use the Boolean operators () < () = () > () and() ()or() Not() to define conditions. Use the Reporter operators () + () - () * () / () to perform calculations. Pick Random () to () Join () () Letter () of () Length of () () Mod () This reports the remainder after a division calculation Round () () of ().</p> |
|--|---|--|--|--|--|---|

| | | | | | | |
|---------------------------------|-----------------------------|--|--|----------------------|-----------------------------|--|
| | | | | | | |
| Education for a Connected World | Managing Information Online | | | Privacy and Security | Managing Information Online | |