# EYFS Computing Curriculum

As part of our Understanding the World curriculum we want to foster their understanding of our culturally, socially, technologically and ecologically diverse world. We understand the benefits of children being given opportunities to explore the world around them in a hands on way. We want our children to have time and space to explore and learn, build on previous knowledge and share their thoughts and ideas with each other. Our environments and staff provide children with regular opportunities to explore the world kinaesthetically. We also use fiction and non-fiction books, look at photographs, watch videos, invite visitors in to talk to us and when possible explore within the wider community.

| | | | Autumn 1 What makes me, me? | Autumn 2 What makes me, me? | Spring 1 Who helps me? | Spring 2 What's out there? | Summer 1 What changes? | Summer 2 What's under the sea? |
|---|---|---|---|---|---|---|---|---|
| Understanding the World | Nursery - Development Matters (3-4 years) | Computing | Children will know how to use simple coding to move the duplo train around the track using the coloured pieces. Children will also control the train with an app with support. | Children will know how to use the Interactive white board to play an educational game. Children have experience of using old phones, keyboard, type writer. | Children will know how to select an app on an iPad and follow instructions. | Children will know how to play interactive games on the iPad/IWB. Children will know how to make digital art on the IWB. | Children will know how to use a camera to take photos. | Children will begin to use seesaw app, on iPad, to photograph their learning to send home. |
| Understanding the World | Reception - Development Matters (Reception) | Computing | Children will know how to use an iPad to take photos. | Children will know how to programme a bluebot. Children will begin to use seesaw app, on iPad, to photograph their learning to send home. | Children will know how to use keys on a keyboard to type their name. | Children will know how to use a trackpad to move a cursor. Children will know how to Google information for topics – using voice recognition software if needed. | Children will know how to use the laptop to make digital art using the programme 'paint'. | Children will know how to make a pictogram using J2E programme. |

# Computing Curriculum unit overview with <mark>resources</mark> Years 1-6

| | Understanding Technology | Digital Literacy *Creating Media* | | Digital Literacy *Data and Information* | Programming | | Online Safety |
|---|---|---|---|---|---|---|---|
| **Year 1** | Technology Around Us <mark>No tech needed</mark> | Digital Painting <mark>Microsoft Paint or Paintz App</mark> | Digital Writing <mark>Microsoft Word</mark> | Grouping Data <mark>Microsoft Powerpoint</mark> | Moving a Robot <mark>Beebots</mark> | Programming Animations <mark>Scratch (online)</mark> | |
| **Year 2** | Information Technology Around Us <mark>No tech needed</mark> | Digital Photography <mark>Pixlr App on Ipad</mark> | Making Music <mark>Chrome Music Lab</mark> | Pictograms <mark>J2e pictogram tool (online)</mark> | Robot Algorithms <mark>Beebots</mark> | Programming Quizzes <mark>Scratch (online)</mark> | |
| **Year 3** | Connecting Computers <mark>No tech needed Dan booked for school tour</mark> | Stop-frame Animation <mark>Imotion App on Ipads</mark> | Desktop Publishing <mark>Adobe Spark on Ipads</mark> | Branching Databases <mark>J2e data tool (online)</mark> | Sequencing Sounds <mark>Scratch (online)</mark> | Events and actions in programs <mark>Scratch (online)</mark> | Online Safety objectives taken from *Education for a Connected World* taught through each unit and *Hearts and Minds PSHE* curriculum. |
| **Year 4** | The Internet <mark>Ipads or Laptops</mark> | Audio Production <mark>Audacity (online)</mark> | Photo Editing <mark>Paint.net</mark> | Data Logging <mark>Data Loggers*</mark> | Repetition in Shapes <mark>Turtle academy (online)</mark> | Repetition in Games <mark>Scratch (online)</mark> | |
| **Year 5** | Sharing Information <mark>Ipads or Laptops</mark> | Video Production <mark>Microsoft Video Editor (free with Windows 10)</mark> | Vector Drawing <mark>Google Drawings application</mark> | Flat-file databases <mark>J2e data tool (online)</mark> | Selection in Physical Computing <mark>Crumble Controller* + Crumble programming environment</mark> | Selection in Quizzes <mark>Scratch (online)</mark> | |
| **Year 6** | Internet Communication <mark>Laptops</mark> | Webpage Creation <mark>Google Sites (needs Google Workspace for Education or individual accounts)</mark> | 3D Modelling <mark>www.tinkercad.com</mark> | Introduction to Spreadsheets <mark>Google Slides</mark> | Variables in Games <mark>Scratch (online)</mark> | Sensing <mark>micro:bit*</mark> | |

# Understanding Technology overview

| | Key Stage 1 | | Lower Key Stage 2 | | Upper Key Stage 2 | |
|---|---|---|---|---|---|---|
| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| **National Curriculum** | Recognise common uses of information technology beyond school | | | | • 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 | |
| **Bollin capability statements** | Pupils recognise and can give examples of common uses of **information technology** they encounter in their daily routine. | Pupils recognise common uses of **information technology** beyond school, including those which they don't frequently encounter in their daily routine.<br><br>Pupils understand that computers are not intelligent but can appear to be when following **algorithms**. They can share examples of this. | Pupils understand that **computers** (in various forms) generally accept **inputs** and produce **outputs** and can give examples of this.<br><br>Pupils recognise - and can describe - some of the services offered by the **Internet**, especially those used for communication and collaboration. | Pupils develop a basic understanding of how computers can be linked to form a **local network** such as those found in schools.<br><br>Pupils recognise that there is a difference between the **Internet** and the **World Wide Web**.<br><br>They can recognise and describe some of the services offered by the **Internet**, especially those used for communication and collaboration. | Pupils know that there is a difference between the **Internet** and the **World Wide Web** and understand that the web is just one of the services offered by the Internet (as well as, e.g. **email** and **VoIP services** such as Skype).<br><br>They appreciate how **search results** are ranked, including an understanding of the use of different **algorithms** to prioritise results. Pupils understand that the highest ranking search results may not always be the most relevant. They appraise search results based on their **relevance** and **trustworthiness**, and can explain what is meant by '**fake news**' | Pupils understand and can explain how **computer networks** work, including the **Internet.** They begin to understand how **data** travels across **networks** in **packets** and how these can be broken up and reconstructed.<br><br>When accessing information online, pupils recognise that **opinions** may be presented as **facts.** They can describe why an opinion may easily become popular online but they understand that this doesn't necessarily make it true.<br><br>They understand that some online content may be commercially sponsored such as **adverts in search results** or content presented by **social media influencers**. |

# Programming overview

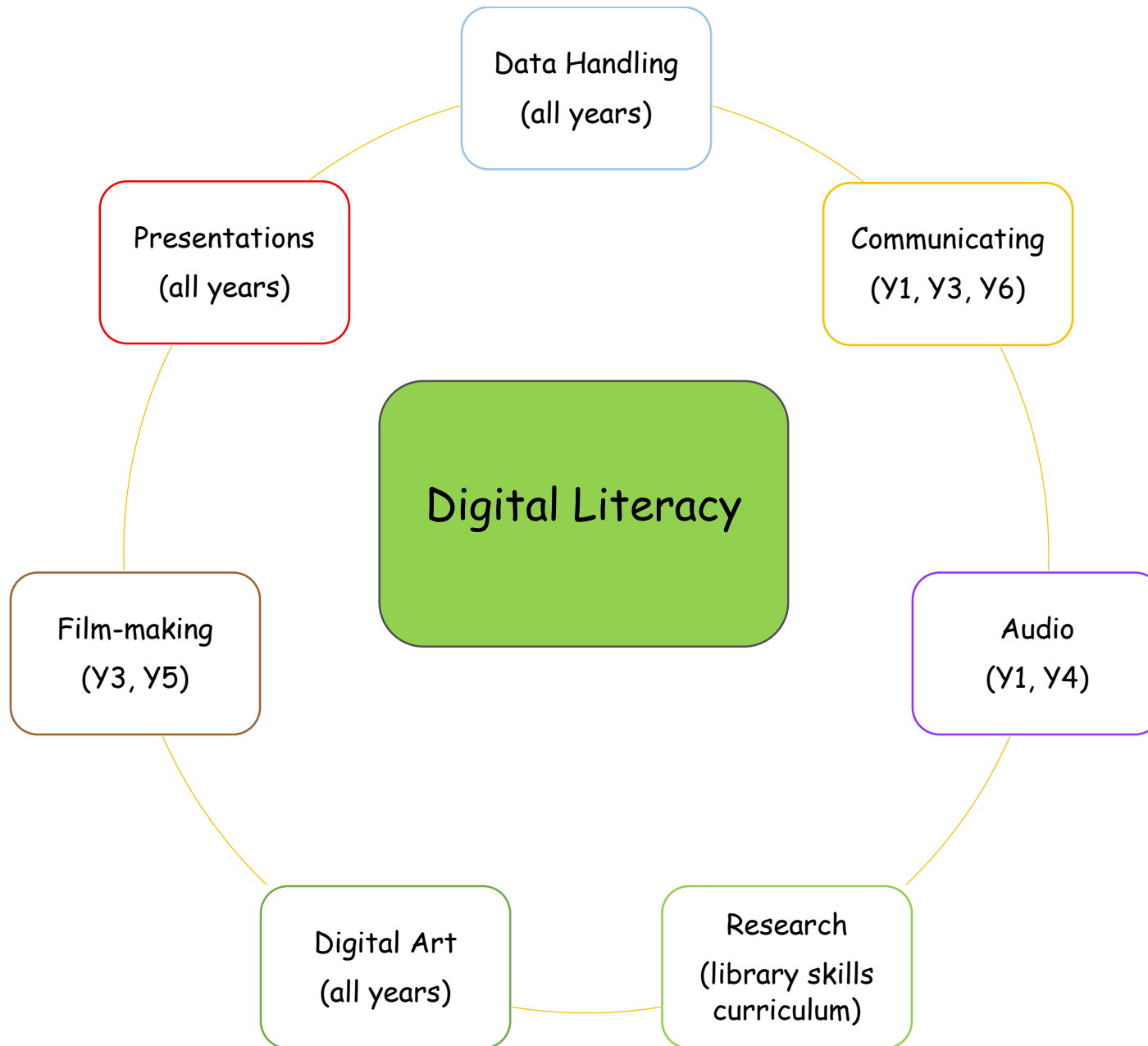| | Key Stage 1 | | Lower Key Stage 2 | | Upper Key Stage 2 | |
|---|---|---|---|---|---|---|
| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| **National Curriculum** | • Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions<br><br>• Create and debug simple programs<br><br>• Use logical reasoning to predict the behaviour of simple programs | | | • Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts<br><br>• Use sequence, selection, and repetition in programs; work with variables and various forms of input and output<br><br>• Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs | | |
| **Bollin Capability statements** | Pupils create, **debug** and implement instructions (simple **algorithms**) as **programs** on a range of digital devices.<br><br>Pupils understand that **digital devices** follow precise and unambiguous instructions.<br><br>Pupils understand that digital devices can **simulate** real situations. | Pupils understand that **algorithms** are implemented as **programs** on **digital devices**.<br><br>Pupils create and **debug programs** to achieve specific goals and understand the importance of **sequence**.<br><br>Pupils use the **principles of logical reasoning** to plan and predict the behaviour of simple **programs**.<br><br>Pupils solve problems on and off screen. | Pupils create **programs** to accomplish specific goals using an increasing range of **digital devices** and **applications**.<br><br>They can **decompose** programs to test them and understand how making even small changes to an **algorithm** can have a significant impact on the outcome.<br><br>They begin using **simple repetition** (e.g. *'repeat x times'* and *'repeat forever'*) and understand how this can be used to improve **efficiency** in their programs. | Pupils create and debug **programs** containing **simple repetition** (e.g. *'repeat x times'* and *'repeat forever'*) as well as more **complex repetition** (e.g. *'nested loops'*)<br><br>Pupils increasingly use their programming capability to control or simulate a range of different **outputs** in **physical systems**.<br><br>Pupils begin to explore and notice the similarities and differences between **programming languages** and use this knowledge to help them create and **debug programs** efficiently. | Pupils create, **deconstruct** and refine **programs** to accomplish specific goals.<br><br>They create programs with **loops** which terminate when **conditions** are met or continue whilst **conditions** are present (e.g. *'repeat until'* and *'repeat whist'*).<br><br>Pupils understand and use simple **selection** (e.g. *if/then* and *if/then/else*) to create **interactive programs** based on **conditions** being met / not met.<br><br>They begin to use simple **operators** within their programs. | Pupils create, **deconstruct** and refine an increasingly complex range of **programs** to accomplish specific goals.<br><br>Pupils create **programs** which store, change and report **variables** (e.g. scores in a game or time) and can include multiple **variables** in a single **program**.<br><br>Pupils can explain why they have structured **algorithms** as they have and describe the effect this has on a **program**. |

## Digital Literacy overview

**Digital Literacy** is the ability to effectively and critically navigate, find, evaluate, summarise, use, create and communicate information using a range of digital technologies.

It deals with the appropriate use of technology-generated words, images, sounds and motion. Developing digital literacy is increasingly important because it supports learners to be confident and competent in their use of technology in a wide variety of contexts.

The inter-related components of digital literacy can and should be developed alongside subject specific knowledge and understanding.

It may be useful to think of Digital Literacy as made up of **several, intertwining elements, with aspects of collecting and manipulating data and presenting information running throughout.**

The diagram below shows some, though certainly not all, of the elements which contribute to developing pupils' **Digital Literacy capability.**

Digital Literacy

Data Handling
(all years)

Communicating
(Y1, Y3, Y6)

Audio
(Y1, Y4)

Research
(library skills
curriculum)

Digital Art
(all years)

Film-making
(Y3, Y5)

Presentations
(all years)

# Digital Literacy overview

| | Key Stage 1 | | Lower Key Stage 2 | | Upper Key Stage 2 | |
|---|---|---|---|---|---|---|
| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| **National Curriculum** | • Use technology purposefully to create, organise, store, manipulate and retrieve digital content | | | | • Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content<br><br>• 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 | |
| **Bollin Capability Statements** | With adult guidance, pupils use a range of technology to enhance and present their learning. Within both specific computing lessons and cross curricular contexts, pupils are able to:<br><br>• enquire with purpose, accessing **digital content** such as text, still and moving images, video and audio<br><br>• collect **data** (e.g. numerical, research facts etc.) which they are able to retrieve, store and present as graphs, tables and charts<br><br>• present and communicate their learning to others in a variety of ways using text, still images, video and audio, including combining 2 or more of these mediums | | With increasing levels of autonomy, pupils are becoming confident and creative users of technology.<br><br>Within both specific computing lessons and cross curricular contexts, pupils are able to:<br><br>• follow and expand on agreed lines of enquiry, using key words and phrases to effectively access **digital content** such as text, still images, video and audio<br>• identify, collect and manipulate different types of **data** (e.g. numerical, research facts etc.) which they present as **information**, showing a greater awareness of purpose and audience.<br>• present and communicate their learning to others in a variety of ways using text, still images, video and audio. They combine **digital tools** to achieve **specific goals** and think carefully about the **impact on their audience.** | | Pupils are confident, capable and creative users of technology.<br><br>Within both specific computing lessons and cross curricular contexts, pupils are able to:<br><br>• create and effectively follow lines of enquiry to support their learning, and are discerning in **evaluating digital content** they encounter<br><br>• identify, collect and analyse different types of **data** (e.g. numerical, words, images, video etc.) which they manipulate and re-present as **information** for a variety of audiences and purposes.<br><br>• select and make effective use of **digital tools** to create **digital artefacts** both under instruction and of their own choosing;<br><br>• decide on the most appropriate way to present their learning - thinking about aesthetics, functionality and impact on the user, and responding appropriately. | |

# Digital Literacy progression by strand

| | Key Stage 1 | Lower Key Stage 2 | Upper Key Stage 2 |
|---|---|---|---|
| | Year 1/2 | Year 3/4 | Y5/6 |

## Research

**Key Stage 1 (Year 1/2):**

Pupils **explore** and **navigate** around adult chosen / age appropriate **website** which includes text / images / sounds / video. **Relate** what they have found out.

They begin to conduct **specific key word searches** using a **child friendly search engine** to **locate exact information** in text / images / sounds / video with the intention of **answering simple / closed questions**.

For example, pupils **listen to stories** or **learn new things** using age appropriate websites.

**Lower Key Stage 2 (Year 3/4):**

Pupils can **navigate with purpose** a small, **chosen** collection of age / interest **appropriate texts and websites** to **read, discover** and follow widening **lines of enquiry**.

**They conduct searches** and **compare results** from **child friendly search engines** to **locate precise facts** and demonstrate **comprehension**. They i**dentify** suitable **key words** and **phrases** to use in own lines of enquiry.

For example, pupils **research the Solar System** with minimal adult input and **share their learning with others** or **use child friendly search engines** to answer questions they have raised.

**Upper Key Stage 2 (Y5/6):**

Pupils **select** suitable **search terms** and use to **follow own areas of interest** filtering to show, access and garner information from a **range of media sources**.

They start to **cross-reference** information. They **question** and seek to **verify** and determine accuracy including **identification of source**.

They create fact-files on each of Henry VIII's wives, **agreeing the information they need in advance** and then **using a variety of sources** (including text, audio, video and books) to track that information down and **check its validity**.

## Data Handling (taken from Maths NC)

| Year 1/2 | Year 1/2 | Year 3/4 | Year 3/4 | Y5/6 |
|---|---|---|---|---|
| Interpret and construct **simple pictograms, tally charts, block diagrams** and **simple tables**. Ask and answer simple questions by counting the number of objects in each category and **sorting** the categories by quantity. Ask and answer questions about **totalling and comparing categorical data**. | Interpret and present data using **bar charts**, **pictograms** and **tables** Solve one-step and two-step questions [for example, 'How many more?' and 'How many fewer?'] using information presented in **scaled bar charts** and **pictograms** and **tables**. | Interpret and present **discrete and continuous data** using appropriate graphical methods, including **bar charts** and **time graphs**. Solve comparison, sum and difference problems using information presented in **bar charts**, **pictograms**, **tables** and other **graphs**. | Solve comparison, sum and difference problems using information presented in a **line graph**. Complete, read and interpret information in **tables**, **including timetables**. | Interpret and construct **pie charts** and **line graphs** and use these to solve problems Calculate and **interpret the mean as an average**. |

## Presentations

**Key Stage 1 (Year 1/2):**

Pupils use tools such as Microsoft's Photostory3, 2Publish, and apps such as Puppet Pals and Book Creator (often selected by an adult) to **mix together different media** (such as text and images) to **present what they have learned** and **plan and share their ideas with others**.

For example, they to **create a photo slideshow of a recent school trip** – **adding text or sound to their photos** and choosing transitions with an adult. They take their tablets with them on a school trip, **recording images and sounds** and then use a digital book creator to create a class book back in the classroom.

**Lower Key Stage 2 (Year 3/4):**

When presenting what they have learned, pupils **use a wider range of tools**: comic strips, desktop publishers, animation tools etc. to **combine text, images, video and audio**.

For example, they use a digital book creator to **make an e-book about the Ancient Romans, including their own artwork, text and a sound recording** of an interview with a Roman soldier. They use a comic strip designer to **record the stages in a science experiment** or **open-ended maths investigation** and then use this to write their recount of the experience.

**Upper Key Stage 2 (Y5/6):**

They now **use digital tools much more confidently, choosing just the right tool for the job.**

They can, for example, create a range of content using a video editor and then **combine content** using Augmented reality or multimedia tools. They **create a village or school trail** or use these tools to **bring a historical event to life**.

They can **confidently move between different apps and programs** to create content.

| | | | |
|---|---|---|---|
| **Communicating (taught in conjunction with online safety)** | Pupils **send simple messages** to others in their class / year group through a monitored messaging tool. They **actively participate** when the teacher models communicating through, for example, **video conferencing tools** such as E2BN's Flash meeting.<br><br>Pupils **begin to use messaging tools to ask questions more purposefully**, making sure messages are clear and appropriate. They know what to do if something they receive upsets them.<br><br>For example, they **send messages to Cinderella** to help her to plan an anniversary party, or **to the 3 little pigs** to tell them what to do about the wolf. | Pupils **widen the range of messaging tools they use** to include, for example, **discussion forums** and **blogs**. They write about something exciting or interesting which has happened recently (**such as a current news event or a visitor into school**), keeping personal information private.<br><br>Pupils **maintain a blog more frequently**, perhaps to **present their learning** or share something they're personally interested in such as a favourite sport, pet or TV programme. They **comment appropriately on other people's blogs** and contribute to class discussions via **forums / noticeboards / collaborative tools**. | Pupils should be **much more confident** now at choosing the right tool for the job.<br><br>They send and receive **attachments via email / messaging** tools. They use **blogs**, **forums** and other **collaborative tools** to communicate **safely and respectfully** using a wider range of media e.g. **pictures**, **video**, **audio** (see 'Presentations').<br><br>Pupils communicate appropriately in spaces **within and beyond school systems** (e.g. in the Scratch community) and show an excellent understanding of how to do this **safely** and **responsibly**. |
| **Audio** | Pupils learn how to **make simple audio equipment work**. They begin to **listen to and learn from sounds** embedded in audio books, websites, sound buttons and other tools.<br><br>Pupils **make their own recordings** using digital devices (microphones, tablets, talking postcards etc.) and **use these recordings purposefully**.<br><br>For example, they **add a voiceover** to a Photostory project, e-book or animated film about a school visit or **make music digitally** using simple music making software.<br><br>Year 1 (blue) | Pupils **download, create and record sounds** and begin to **combine, edit and present** them. This includes learning to, for example, **delete unwanted sections of audio**, or **combine multiple recordings** to create one longer piece. They **begin to understand the impact** different types of music can have on an audience and think about what effect they want to achieve when recording or downloading music.<br><br>For example, they use everyday objects to **create sound effects for a 'radio play'** or **record a percussion accompaniment for a short animation**. They learn to record and edit these in programs such as audio editing to create a finished product. | Pupils **confidently choose when to use audio to enhance their work** or present their learning. They learn how to **digitally manipulate audio** to create a desired effect, including **editing unwanted sections of a recording, copying and pasting sections and digitally manipulating volume**. They use a selection of apps / tools to **create and record their own music tracks and embed them** into other projects such as presentations or films.<br><br>For example, pupils **combine voice and audio** when creating a 'river tour' **showing what they have learned about the structure of rivers**, or **create music to accompany a silent 'scary' film, thinking carefully about the impact on the audience**. |
| **Digital Art** | Pupils progress from the approach in EYFS where they will be encouraged to **discover** and **explore what their fingers can do on, for example, a tablet,** showing enjoyment and ability to talk about what they have done.<br><br>Pupils **experiment** with how to create a range of effects - **shades**, **patterns** and **results** using different **eTools**. | Pupils **demonstrate** an expanding repertoire of experiments with digital tools exploring **shade, shape, pattern, screen effects, marks and lines.**<br><br>They can use what they have learned to **respond to specific tasks**, such as creating firework picture.<br><br>They make effective use of **known techniques** to **create an intended artefact**, **reflecting** on and **refining** their work as appropriate. | Pupils **plan** and **develop**, in a **sustained** way, ideas with **shade, shape, pattern, screen effects, marks and lines** into some finished works of art.<br><br>Show the **influence of screen drafts/ jottings** to *tangible* works of art.<br><br>Pupils can **explain what works well digitally**, what doesn't and how technology can support artistic development. |
| | **Where practical, it would be good practice to mirror screen based experimentations with *tangible* attempts using comparable techniques and media.** | | |

| Film-making | With adult support, **pupils create films from still photos**, choosing **preferred transition** and similar **basic visual effects**.

They **contribute to discussions** about the **choice of audio** to accompany a film and can talk about **how different pieces of music make them feel**.

They **use basic film making techniques** to retell familiar stories or those developed as part of a class / group.  This includes both **live action filming** and **stop-motion animation**. | Pupils begin to understand the **grammar of film** such as how different **camera distances** and **angles** can **have different impacts on the audience.**

They apply what they have learned about the **impact on the audience of different types of music or sound effects** and can digitally **create, record and manipulate** audio accordingly.

Pupils can **edit sections of film (live or animated) together**, trimming and adding visual effects or transitions to create a desired effect. | Pupils **combine a range of known film making techniques** confidently and creatively to achieve a specific goal.

They think carefully about the **intended effect** of their choices on their **audience** and reflect on whether the desired effect has been achieved, **refining their work** where appropriate.

They **use editing techniques creatively** and can confidently use a combination of **visual and audio effects** in their films |

# Online Safety overview

| | | Key Stage 1 | | Lower Key Stage 2 | | Upper Key Stage 2 | |
|---|---|---|---|---|---|---|---|
| | | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| National Curriculum | | • 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. | | • Use technology safely, respectfully and responsibly; recognise acceptable / unacceptable behaviour; identify a range of ways to report concerns about content and contact. | | | |
| Bollin Capability Statements | | Pupils are becoming increasingly aware of content, contact and conduct benefits and risks, how to manage them safely and where to go for help and support when they have concerns or feel unsafe, worried or upset.<br><br>They are beginning to develop a better understanding of their own and others' 'identity' (including online), the importance of keeping personal information private and of seeking permission before sharing. They check with an adult before clicking on pop ups, notifications or dialogue boxes.<br><br>They increasingly use a range of digital devices to communicate safely and respectfully online, making links to positive behaviour in the physical world. | | Pupils are able to identify a range of content, contact and conduct benefits and risks, describe how to manage them safely and respectfully and know where to go for help and support when they have concerns.<br><br>They can explain what is meant by 'identity', how this might be represented differently in different situations and why others might mis-represent their identity. They develop their understanding of 'trust' and the importance of being careful about what is shared online and of giving and gaining consent.<br><br>Pupils can describe positive and negative effects of online activity / behaviours and begin to understand how to make safer and healthier decisions, including considering the appropriateness of games and online content for different ages.<br><br>Pupils can describe positive ways for someone to interact with others online and understand how this will positively impact on how others perceive them. | | Pupils identify and manage the benefits and risks of a range of online activities in terms of content, contact and conduct to ensure they are safe, respectful and responsible online. They know how to report concerns, seek support for themselves and others and persist until they get the help they need.<br><br>Pupils make responsible choices about their own online identity and consider the potential impact of this on their digital footprint. They understand that online identities can be copied or modified and some of the possible implications of this.<br><br>They can describe times when they might responsibly share personal information (including payment details), the importance of seeking permission and the need for strong passwords.<br><br>They can describe ways technology may impact their own and others' physical and mental wellbeing (positively and negatively), understand their responsibilities in regard to this and can suggest a range of positive strategies to limit the negative impact of technology and online behaviours. | |

# Progression overview by strand and year group -these progression statements are designed to complement the National Curriculum for Computing in England.

| | Understanding Technology | Programming | Digital Literacy | Online Safety |
|---|---|---|---|---|
| **Year 1** | Pupils recognise and can give examples of common uses of **information technology** they encounter in their daily routine. | Pupils create, **debug** and implement instructions (simple **algorithms**) as **programs** on a range of digital devices.<br><br>Pupils understand that **digital devices** follow precise and unambiguous instructions. They understand that digital devices can **simulate** real situations. | With adult guidance, pupils use a range of technology to enhance and present their learning. Within both specific computing lessons and cross curricular contexts, pupils are able to:<br><br>• enquire with purpose, accessing **digital content** such as text, still and moving images, video and audio | Pupils are becoming increasingly aware of **content**, **contact** and **conduct** benefits and risks, how to manage them safely and where to go for help and support when they have concerns or feel unsafe, worried or upset.<br><br>They are beginning to develop a better understanding of their own and others' **'identity'** (including online), the importance of keeping personal information private and of seeking permission before sharing. They check with an adult before clicking on **pop ups**, **notifications** or **dialogue boxes**.<br><br>They increasingly use a range of **digital devices** to communicate safely and respectfully online, making links to positive behaviour in the physical world |
| **Year 2** | Pupils recognise common uses of **information technology** beyond school, including those which they don't frequently encounter in their daily routine.<br><br>Pupils understand that computers are not intelligent but can appear to be when following **algorithms**. They can share examples of this. | Pupils understand that **algorithms** are implemented as **programs** on **digital devices**.<br><br>Pupils create and **debug programs** to achieve specific goals and understand the importance of **sequence**.<br><br>Pupils use the **principles of logical reasoning** to plan and predict the behaviour of simple **programs**. They solve problems on and off screen | • collect **data** (e.g. numerical, research facts etc.) which they are able to retrieve, store and present as graphs, tables and charts<br><br>• present and communicate their learning to others in a variety of ways using text, still images, video and audio, including combining 2 or more of these medium | |
| **Year 3** | Pupils understand that **computers** (in various forms) generally accept **inputs** and produce **outputs** and can give examples of this.<br><br>Pupils recognise - and can describe - some of the services offered by the **Internet**, especially those used for communication and collaboration. | Pupils create **programs** to accomplish specific goals using an increasing range of **digital devices** and **applications**.<br><br>They can **decompose** programs to test them and understand how making even small changes to an **algorithm** can have a significant impact on the outcome. | With increasing levels of autonomy, pupils are becoming confident and creative users of technology.<br><br>Within both specific computing lessons and cross curricular contexts, pupils are able to: | Pupils are able to identify a range of **content**, **contact** and **conduct** benefits and risks, describe how to manage them safely and respectfully and know where to go for help and support when they have concerns.<br><br>They can explain what is meant by **'identity'**, how this might be represented differently in different situations and why others might mis-represent their identity. They develop their |

| | | | |
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| | | They begin using **simple repetition** (e.g. *'repeat x times'* and *'repeat forever'*) and understand how this can be used to improve **efficiency** in their programs. | • follow and expand on agreed lines of enquiry, using key words and phrases to effectively access **digital content** such as text, still images, video and audio | understanding of **'trust'** and the importance of being careful about what is shared online and of giving and gaining **consent**. |
| **Year 4** | Pupils develop a basic understanding of how computers can be linked to form a **local network** such as those found in schools.<br><br>Pupils recognise that there is a difference between the **Internet** and the **World Wide Web**.<br><br>They can recognise and describe some of the services offered by the **Internet**, especially those used for communication and collaboration. | Pupils create and debug **programs** containing **simple repetition** (e.g. *'repeat x times'* and *'repeat forever'*) as well as more **complex repetition** (e.g. *'nested loops'*)<br><br>Pupils increasingly use their programming capability to control or simulate a range of different **outputs** in **physical systems**.<br><br>Pupils begin to explore and notice the similarities and differences between **programming languages** and use this knowledge to help them create and **debug programs** efficiently. | • identify, collect and manipulate different types of **data** (e.g. numerical, research facts etc.) which they present as **information**, showing a greater awareness of purpose and audience<br><br>• present and communicate their learning to others in a variety of ways using text, still images, video and audio<br><br>• They combine **digital tools** to achieve **specific goals** and think carefully about the **impact on their audience** | Pupils can describe **positive and negative effects of online activity / behaviours** and begin to understand how to make safer and healthier decisions, including considering the appropriateness of games and online content for different ages.<br><br>Pupils can describe positive ways for someone to interact with others online and understand how this will positively impact on how others perceive them. |
| **Year 5** | Pupils know that there is a difference between the **Internet** and the **World Wide Web** and understand that the web is just one of the services offered by the Internet (as well as, e.g. **email** and **VoIP services** such as Skype).<br><br>They appreciate how **search results** are ranked, including an understanding of the use of different **algorithms** to prioritise results. Pupils understand that the highest-ranking search results may not always be the most relevant. They appraise search results based on their **relevance** and **trustworthiness**, and can explain what is meant by '**fake news**' | Pupils create, **deconstruct** and refine **programs** to accomplish specific goals.<br><br>They create programs with **loops** which terminate when **conditions** are met or continue whilst **conditions** are present (e.g. *'repeat until'* and *'repeat whist'*).<br><br>Pupils understand and use simple **selection** (e.g. *if/then* and *if/then/else*) to create **interactive programs** based on **conditions** being met / not met. They begin to use simple **operators** within their programs. | Pupils are confident, capable and creative users of technology.<br><br>Within both specific computing lessons and cross curricular contexts, pupils are able to:<br><br>• create and effectively follow lines of enquiry to support their learning, and are discerning in **evaluating digital content** they encounter<br><br>• identify, collect and analyse different types of **data** (e.g. numerical, words, images, video etc.) which they manipulate and re-present as **information** for a variety of audiences and purposes | Pupils identify and manage the benefits and risks of a range of online activities in terms of **content**, **contact** and **conduct** to ensure they are **safe**, **respectful** and **responsible** online. They know how to report concerns, seek support for themselves and others and persist until they get the help they need.<br><br>Pupils make responsible choices about their own online **identity** and consider the potential impact of this on their **digital footprint**. They understand that online **identities** can be **copied** or **modified** and some of the possible implications of this. |

| Year 6 | Pupils understand and can explain how **computer networks** work, including the **Internet.** They begin to understand how **data** travels across **networks** in **packets** and how these can be broken up and reconstructed.<br><br>When accessing information online, pupils recognise that **opinions** may be presented as **facts.** They can describe why an opinion may easily become popular online but they understand that this doesn't necessarily make it true.<br><br>They understand that some online content may be commercially sponsored such as **adverts in search results** or content presented by **social media influencers**. | Pupils create, **deconstruct** and refine an increasingly complex range of **programs** to accomplish specific goals.<br><br>Pupils create **programs** which store, change and report **variables** (e.g. scores in a game or time) and can include multiple **variables** in a single **program**.<br><br>Pupils can explain why they have structured **algorithms** as they have and describe the effect this has on a **program**. | • select and make effective use of **digital tools** to create **digital artefacts** both under instruction and of their own choosing<br><br>• decide on the most appropriate way to present their learning - thinking about **aesthetics**, **functionality** and **impact** on the user, and responding appropriately. | They can describe times when they might responsibly share **personal information** (including payment details), the importance of seeking permission and the need for **strong passwords**.<br><br>They can describe ways technology may impact their own and others' **physical and mental wellbeing** (positively and negatively), understand their responsibilities in regard to this and can suggest a range of positive strategies to limit the negative impact of technology and online behaviours. |
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