Ditchling St Margaret's Primary and Nursery School

Kindness Respect Perseverance

'Living life in all its fullness' John 10:10

# Computing Curriculum

Kindness Respect Perseverance

'Living life in all its fullness' John 10:10

# Computing Curriculum at Ditchling CE Primary and Nursery School

Planned Curriculum

## INTENT

Our aim is to give children a thorough and ambitious education in computing, equipping them to use technology, computational thinking and creativity to understand and change the world. It is now more important than ever that children are able to use technology positively, responsibly and safely, and that they see good models of this.

By the time they leave Ditchling, children will have gained key knowledge and skills in the three main strands of the National Curriculum for Computing (2014): computer science (programming and understanding how digital systems work), information technology (using computer systems to create, store, retrieve and send information) and digital literacy (evaluating digital content and using technology safely and respectfully). Furthermore, from Nursery to Year 6, experiences in computing and the wider curriculum are planned to develop children's computational thinking skills.

Our knowledge-engaged curriculum enables children to understand how computers and computer systems (such as the internet) work, and how they are designed and programmed. It ensures they know what to do if they have concerns about anything they encounter online, and how to be safe, responsible and respectful when using the internet. Equally, our offer provides many opportunities for learners to apply their evolving knowledge imaginatively, becoming fluent and creative in their mastery of computing. The depth and breadth of our coverage aims to provide all our children with a solid grounding for future learning and the ability to become active digital citizens in the modern world.

Enacted Curriculum

## IMPLEMENTATION

At Ditchling, teachers use specified units from the highly endorsed 'Teach Computing' scheme, published by NCCE (National Centre for Computing Education), as a starting point for the planning of their computing lessons. The key knowledge and skills that must be taught within each unit have been identified and carefully mapped to support the progression of children's learning across the primary phases, building towards mastery of the end of key stage objectives from the National Curriculum. Freedom for teachers to develop and adapt computing units within the framework of the progression map leads to rich links with engaging contexts in other subjects and topics, while still ensuring systematic coverage of objectives.

Teachers support the children and scaffold this knowledge as appropriate, according to the children's age group, as well as individual needs. This process is used to further consolidate the key knowledge of the topic.

To secure thorough understanding of online safety we use Project Evolve as an approach to further enhance our online safety offer.

Our computing progression framework ensures a balanced coverage of the three computing strands (computer science, information technology and digital literacy). The children work on all three strands each year. As they progress through the school, children build on their prior learning within each strand, covering new or deeper knowledge and developing their technical skills. Within all sequences of lessons, teachers plan a phase of progressive questioning which extends to and promotes the higher order thinking of all learners. Questions initially focus on the recall or retrieval of knowledge, and help to scaffold computational thinking skills, such as pattern recognition. Questions then extend to promote application of the knowledge in a new situation and are designed to promote independence in analytical thinking.

The relevant, context-embedded computing experiences through which our knowledge-engaged curriculum is taught, will benefit learners in secondary school, further education and future workplaces. From research methods, use of presentation and creative tools and computational and critical thinking, computing at Ditchling gives children the building blocks that enable them to pursue a wide range of interests and vocations in the next stage of their lives.

Assessed and Learned Curriculum

| IMPACT |
| --- |
| Our approach to the curriculum provides fun, engaging and meaningful learning for all pupils, in which the children understand not only the content that is taught but the opportunities offered to them by their computing education, enabling them to become creators and change-makers in our digital world. The impact of our curriculum and the quality of children's learning is evident in their work, which is shared, published and celebrated in their computing books – using photographs and QR codes to showcase digital work. Monitoring of these outcomes, alongside interviews with teachers and learners, allows the subject lead to ensure the knowledge-engaged curriculum taught is being learned and retained by all pupils. All this information also feeds into teachers' future planning and enables assessment of pupil's knowledge and skills. Through cross-curricular uses of computing in other subjects, teachers are able to revisit misconceptions and knowledge gaps in computing in tandem with other curriculum areas. This supports varied paces of learning and ensures all pupils make good progress. |

JOHN 10:10 LIFE IN ALL ITS FULLNESS

# EYFS

- E-safety – Self-image and Identity
- E-safety – Online Bullying
- E-safety – Privacy and Security / Copyright and Ownership
- E-safety – Health, Wellbeing and Lifestyle

# Year 1

- Computing Systems and Networks – Technology around us
  - E-safety – Self-image and Identity
- Creating Media – digital painting
  - E-safety – Online Bullying
- Programming A – Moving a Robot
  - E-safety – Privacy and Security / Copyright and Ownership
- Data and Information – Grouping Data
  - E-safety – Health, Wellbeing and Lifestyle
- Creating Media - Writing
  - E-safety – Online Relationships
- E-safety – Managing Online Information / Online Reputation
- E-safety – Online Relationships
- Programming B – Introduction to Animation
  - E-safety – Managing Online Information / Online Reputation

# Year 2

- Computing Systems and Networks – IT Around Us
  - E-safety – Self-image and Identity
- Creating Media – Digital Photography
  - E-safety – Online Bullying
- Programming A – Robot Algorithms
  - E-safety – Privacy and Security / Copyright and Ownership
- Data and Information – Pictograms
  - E-safety – Health, Wellbeing and Lifestyle
- Creating Media – Making Music
  - E-safety – Online Relationships
- Programming B – Introduction to Quizzes
  - E-safety – Managing Online Information / Online Reputation

# Year 3

- Computing Systems and Networks – Connecting Computers
  - E-safety – Self-image and Identity
- Creating Media – Animation
  - E-safety – Online Bullying

JOHN 10:10 LIFE IN ALL ITS FULLNESS

## Year 4

- Programming A – Sequence in Music
  - E-safety – Privacy and Security / Copyright and Ownership
- Data and Information – Branching Databases
  - E-safety – Health, Wellbeing and Lifestyle
- Creating Media –Desktop Publishing
  - E-safety – Online Relationships
- Programming B – Events and Actions
  - E-safety – Managing Online Information / Online Reputation
- Data and Information – Data Logging
  - E-safety – Health, Wellbeing and Lifestyle
- Programming A – Repetition in Shapes
  - E-safety – Privacy and Security / Copyright and Ownership
- Creating Media – Audio Editing
  - E-safety – Online Bullying
- Computing Systems and Networks – The Internet
  - E-safety – Self-image and Identity

## Year 5

- Creating Media – Photo Editing
  - E-safety – Online Relationships
- Programming B – Repetition in Games
  - E-safety – Managing Online Information / Online Reputation
- Computing Systems and Networks – Sharing Information
  - E-safety – Self-image and Identity
- Creating Media – Video Editing
  - E-safety – Online Bullying
- Programming B – Selection in Quizzes
  - E-safety – Managing Online Information / Online Reputation
- Creating Media – Vector Drawing
  - E-safety – Online Relationships
- Data and Information – Flat File Databases
  - E-safety – Health, Wellbeing and Lifestyle
- Programming A – Physical Computing
  - E-safety – Privacy and Security / Copyright and Ownership

## Year 6

- Computing Systems and Networks – Communication
  - E-safety – Self-image and Identity
- Creating Media – Web Page Creation
  - E-safety – Online Bullying
- Programming A – Variables in Games
  - E-safety – Privacy and Security / Copyright and Ownership
- Data and Information – Spreadsheets
  - E-safety – Health, Wellbeing and Lifestyle
- Creating Media – 3D Modelling
  - E-safety – Online Relationships
- Programming B – Sensing
  - E-Safety – Managing Online Information / Online Reputation

# Key Skills for Computing

## EYFS: Pupils should be taught to:

- Follow instructions as part of practical activities and debug if things go wrong.
- Experiment with programming a robot such as BeeBot.
- Give simple instructions.
- Operate a camera to take photos.
- Recognise a range of technology in home and school.
- Know what a keyboard and mouse is.
- Use a simple paint tool to create digital art.
- Begin learning some rules to follow to keep us safe online.
- Know what to do if they come across something that worries them or makes them feel uncomfortable.

## KS1: Pupils should be taught to:

- 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.
- 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.

## KS2: Pupils should be taught to:

- 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.

## KS3: Pupils should be taught to:

- **Computational Thinking** – The ability to break down complex problems into smaller, manageable parts (decomposition), recognise patterns, abstract relevant information, and develop step-by-step solutions (algorithms).
- **Programming** – Understanding basic programming concepts such as variables, loops, conditionals, and functions. Students should be able to write and debug simple programs, typically in languages like Python or Scratch.
- **Algorithm Design** – Creating algorithms to solve problems efficiently, with a focus on understanding how different algorithms can affect the performance and outcomes of a program.
- **Data Representation** – Understanding how data is represented in computers, including binary numbers, text encoding (e.g., ASCII), and images (e.g., pixels).
- **Networks and the Internet** – Grasping the basics of how computer networks work, including the Internet, key protocols, and the role of hardware like routers and switches.
- **Cybersecurity** – Awareness of online security risks such as hacking, phishing, and malware, along with strategies for protecting personal data and systems.
- **Digital Literacy** – Developing the ability to use a range of digital tools and technologies effectively and responsibly, including awareness of online safety and digital citizenship.
- **Hardware and Software** – Understanding the difference between hardware (physical components of a computer) and software (programs and operating systems), and how they interact to perform tasks.

# EYFS

| Areas of Learning | | What we offer |
|---|---|---|
| Communication and Language | Reading frequently to children, and engaging them actively in stories, non-fiction, rhymes and poems, and then providing them with extensive opportunities to use and embed new words in a range of contexts, will give children the opportunity to thrive | Talking button.<br><br>Common Sense Media - how to stay safe.<br><br>Reminders before using technology of what to do if they feel uncomfortable.<br><br>Digiduck/WiseOwl (childnet) stories.<br><br>LED writing boards |
| Personal, Social and Emotional Development | Children should have confidence in their own abilities, to persist and wait for what they want and direct attention as necessary. | BeeBots,<br><br>Cars,<br><br>Common Sense Media<br><br>Digiduck/WiseOwl (childnet) stories. |
| Physical Development | Gross motor skills provide the foundation for developing healthy bodies and social and emotional well-being. Fine motor control and precision helps with hand-eye co-ordination, which is later linked to early literacy. | BeeBots<br><br>Cars,<br><br>interactive boards - games, dancing |
| Literacy | Writing involves transcription (spelling and handwriting) and composition (articulating ideas and structuring them in speech, before writing). | Talking clips<br><br>sound buttons |

| | | |
|---|---|---|
| | | talking story books<br><br>Digiduck/WiseOwl (childnet) stories. |
| Mathematics | It is important that children develop positive attitudes and interests in mathematics, look for patterns and relationships, spot connections, 'have a go', talk to adults and peers about what they notice and not be afraid to make mistakes. | Beebots - early coding,<br><br>Remote control cars, |
| Understanding the World | Understanding the world involves guiding children to make sense of their physical world and their community. | Camera, tablet, VR set<br><br>Beebots, Codapillars, Probots, remote control cars (nursery)<br><br>Defunct video camera, digital camera, computer, keyboard and mouse, metal detectors, headphones, phones. |
| Expressive Arts and Design | It is important that children have regular opportunities to engage with the arts, enabling them to explore and play with a wide range of media and materials. The quality and variety of what children see, hear and participate in is crucial for developing their understanding, self-expression, vocabulary and ability to communicate through the arts. | Busy Things<br><br>iPads, general use & taking photos<br><br>QR code book to access - Busythings, Phonics Play & Top Marks.<br><br>Lightboard - changing, mixing |

| National Curriculum Coverage — Years 1 and 2 | 1.1 Technology around us | 1.2 Digital painting | 1.3 Moving a robot | 1.4 Grouping data | 1.5 Digital writing | 1.6 Programming animations | 2.1 Information technology around us | 2.2 Digital photography | 2.3 Robot algorithms | 2.4 Pictograms | 2.5 Digital music | 2.6 Programming quizzes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | ✓ | ✓ | | ✓ | ✓ | | ✓ | ✓ | | ✓ | ✓ | ✓ |
| 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 | ✓ | | | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | | |

| National curriculum coverage - Years 3 and 4 | 3.1 Connecting computers | 3.2 Stop-frame animation | 3.3 Sequencing sounds | 3.4 Branching databases | 3.5 Desktop publishing | 3.6 Events and actions in programs | 4.1 The internet | 4.2 Audio production | 4.3 Repetition in shapes | 4.4 Data logging | 4.5 Photo editing | 4.6 Repetition in games |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | | ✓ | | ✓ | | | ✓ | ✓ | | | ✓ | |

| National curriculum coverage - Years 5 and 6 | 5.1 Systems and searching | 5.2 Video production | 5.3 Selection in physical computing | 5.4 Flat-file databases | 5.5 Introduction to vector graphics | 5.6 Selection in quizzes | 6.1 Communication and collaboration | 6.2 Webpage creation | 6.3 Variables in games | 6.4 Introduction to spreadsheets | 6.5 3D modelling | 6.6 Sensing movementz |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | ✓ | ✓ | | | | | | ✓ | ✓ | | ✓ | |

## E-Safety Curriculum – Project Evolve

An online safety curriculum developed and resources through a number of high profile agencies and specialists within the Online safety field. It prepares the children for the digital world across 8 different strands:

**1. Self-image and online identity**

**2. Online Relationships**

**3. Online Bullying**

**4. Copyright and Ownership**

**5. Online Reputation**

**6. Managing Online information**

**7. Health, well-being and lifestyle**

**8. Privacy and Security**

Within each strand there is a set of progressive objectives covered. The objectives have been mapped into the PSHE and Computing curriculum and are taught once a term from Years 1-6, with more of a focus during Safer Internet Week.

| Year Group | Self image and identity (Term 1) | Online Relationships (Term 5) | Online Bullying (Term 2) | Copyright and Ownership (Term 3) | Online Reputation (Term 6) | Managing Online information (Term 6) | Health, well-being and lifestyle (Term 4) | Privacy and security (Term 3) |
|---|---|---|---|---|---|---|---|---|
| **EYFS** | I can recognise, online or offline, that anyone can say 'no' - 'please stop' - 'I'll tell' - 'I'll ask' to somebody who makes them feel sad, uncomfortable, embarrassed or upset. | I can recognise some ways in which the internet can be used to communicate.<br>I can give examples of how I (might) use technology to communicate with people I know | I can describe ways that some people can be unkind online.<br>I can offer examples of how this can make others feel | I know that work I create belongs to me.<br>I can name my work so that others know it belongs to me | I can identify ways that I can put information on the internet. | I can talk about how to use the internet as a way of finding information online.<br>I can identify devices I could use to access information on the internet. | I can identify rules that help keep us safe and healthy in and beyond the home when using technology.<br>I can give some simple examples of these rules | I can identify some simple examples of my personal information (e.g. name, address, birthday, age, location).<br>I can describe who would be trustworthy to share this information with; I can explain why they are trusted |
| **1** | I can recognise that there may be people online who could make someone | I can give examples of when I should ask permission to do | I can describe how to behave online in ways | I can explain why work I create using technology belongs to me | I can recognise that information can stay | I can give simple examples of how to find information using digital | I can explain rules to keep myself safe when using | I can explain how passwords are used to |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | feel sad, embarrassed or upset.<br>If something happens that makes me feel sad, worried, uncomfortable or frightened I can give examples of when and how to speak to an adult I can trust and how they can help. | something online and explain why this is important. I can use the internet with adult support to communicate with people I know I can explain why it is important to be considerate and kind to people online and to respect their choices. I can explain why things one person finds funny or sad online may not always be seen in the same way by others. | that do not upset others and can give examples. | | online and could be copied.<br>I can describe what information I should not put online without asking a trusted adult first. | technologies, e.g. search engines, voice activated searching.<br>I know / understand that we can encounter a range of things online including things we like and don't like as well as things which are real or make believe / a joke.<br>I know how to get help from a trusted adult if we see content that makes us feel sad, uncomfortable, worried or frightened. | technology both in and beyond the home. | protect information, accounts and devices.<br>I can recognise more detailed examples of information that is personal to someone (e.g where someone lives and goes to school, family names).<br>I can explain why it is important to always ask a trusted adult before sharing any personal information online, belonging to myself or others. |
| **2** | I can give examples of issues online that might make someone feel sad, worried, uncomfortable or frightened; I can give examples of how they might get help. | I can give examples of how someone might use technology to communicate with others they don't also know offline and explain why this might be risky. (e.g. email, online gaming, a pen-pal in another school / country).<br>I can explain who I should ask before sharing things about myself or others online.<br>I can describe different ways to ask for, give, or deny my permission online and can identify who can help me if I am not sure. I can explain why I have a right to say 'no' or 'I will have to ask someone'. I can explain who can help me if I feel under pressure to agree to something I am unsure about or don't want to do.<br>I can explain how it may make others feel if I do | I can explain what bullying is, how people may bully others and how bullying can make someone feel.<br>I can explain why anyone who experiences bullying is not to blame. I can talk about how anyone experiencing bullying can get help. | I can recognise that content on the internet may belong to other people.<br>I can describe why other people's work belongs to them | I can explain how information put online about someone can last for a long time.<br>I can describe how anyone's online information could be seen by others. I know who to talk to if something has been put online without consent or if it is incorrect | I can use simple keywords in search engines.<br>I can demonstrate how to navigate a simple webpage to get to information I need (e.g. home, forward, back buttons; links, tabs and sections).<br>I can explain what voice activated searching is and how it might be used, and know it is not a real person (e.g. Alexa, Google Now, Siri).<br>I can explain the difference between things that are imaginary, 'made up' or 'make believe' and things that are 'true' or 'real' I can explain why some information I find online may not be real or true. | I can explain simple guidance for using technology in different environments and settings e.g. accessing online technologies in public places and the home environment.<br>I can say how those rules / guides can help anyone accessing online technologies | I can explain how passwords can be used to protect information, accounts and devices.<br>I can explain and give examples of what is meant by 'private' and 'keeping things private'.<br>I can describe and explain some rules for keeping personal information private (e.g. creating and protecting passwords). |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | not ask their permission or ignore their answers before sharing something about them online.<br>I can explain why I should always ask a trusted adult before clicking 'yes', 'agree' or 'accept' online | | | | | | |
| **3** | I can explain what is meant by the term 'identity'<br>I can explain how people can represent themselves in different ways online.<br>I can explain ways in which someone might change their identity depending on what they are doing online (e.g. gaming; using an avatar; social media) and why. | I can describe ways people who have similar likes and interests can get together online.<br>I can explain what it means to 'know someone' online and why this might be different from knowing someone offline.<br>I can explain what is meant by 'trusting someone online', why this is different from 'liking someone online', and why it is important to be careful about who to trust online including what information and content they are trusted with.<br>I can explain why someone may change their mind about trusting anyone with something if they feel nervous, uncomfortable or worried.<br>I can explain how someone's feelings can be hurt by what is said or written online.<br>I can explain the importance of giving and gaining permission before sharing things online; how the principles of sharing online is the same as sharing offline e.g. | I can describe appropriate ways to behave towards other people online and why this is important. I can give examples of how bullying behaviour could appear online and how someone can get support | I can explain why copying someone else's work from the internet without permission isn't fair and can explain what problems this might cause. | I can explain how to search for information about others online.<br>I can give examples of what anyone may or may not be willing to share about themselves online.<br>I can explain the need to be careful before sharing anything personal.<br>I can explain who someone can ask if they are unsure about putting something online. | I can demonstrate how to use key phrases in search engines to gather accurate information online. I can explain what autocomplete is and how to choose the best suggestion. I can explain how the internet can be used to sell and buy things<br>I can explain the difference between a 'belief', an 'opinion' and a 'fact. and can give examples of how and where they might be shared online, e.g. in videos, memes, posts, news stories etc.<br>I can explain that not all opinions shared may be accepted as true or fair by others (e.g. monsters under the bed).<br>I can describe and demonstrate how we can get help from a trusted adult if we see content that makes us feel sad, uncomfortable, worried or frightened. | I can explain why spending too much time using technology can sometimes have a negative impact on anyone;<br>I can give some examples of both positive and negative activities where it is easy to spend a lot of time engaged<br>I can explain why some online activities have age restrictions, why it is important to follow them and know who I can talk to if others pressure me to watch or do something online that makes me feel uncomfortable (e.g. age restricted gaming or web sites). | I can describe simple strategies for creating and keeping passwords private.<br>I can give reasons why someone should only share information with people they choose to and can trust. I can explain that if they are not sure or feel pressured then they should tell a trusted adult.<br>I can describe how connected devices can collect and share anyone's information with others. |

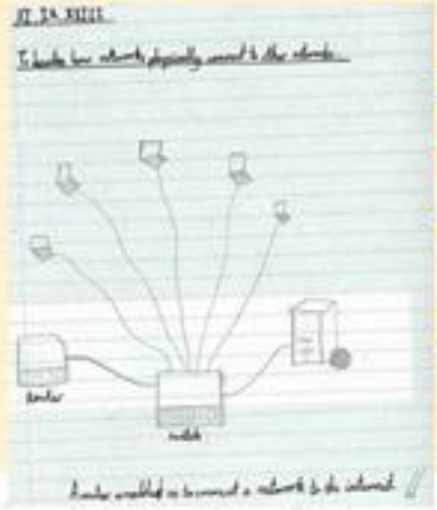
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | sharing images and videos. | | | | | | |
| **4** | I can explain how my online identity can be different to my offline identity.<br>I can describe positive ways for someone to interact with others online and understand how this will positively impact on how others perceive them.<br>I can explain that others online can pretend to be someone else, including my friends, and can suggest reasons why they might do this. | I can describe strategies for safe and fun experiences in a range of online social environments (e.g. livestreaming, gaming platforms)<br>I can give examples of how to be respectful to others online and describe how to recognise healthy and unhealthy online behaviours.<br>I can explain how content shared online may feel unimportant to one person but may be important to other people's thoughts feelings and beliefs. | I can recognise when someone is upset, hurt or angry online. I can describe ways people can be bullied through a range of media (e.g. image, video, text, chat).<br>I can explain why people need to think carefully about how content they post might affect others, their feelings and how it may affect how others feel about them (their reputation). | When searching on the internet for content to use, I can explain why I need to consider who owns it and whether I have the right to reuse it.<br>I can give some simple examples of content which I must not use without permission from the owner, e.g. videos, music, images. | I can describe how to find out information about others by searching online.<br>I can explain ways that some of the information about anyone online could have been created, copied or shared by others | I can analyse information to make a judgement about probable accuracy and I understand why it is important to make my own decisions regarding content and that my decisions are respected by others.<br>I can describe how to search for information within a wide group of technologies and make a judgement about the probable accuracy (e.g. social media, image sites, video sites).<br>I can describe some of the methods used to encourage people to buy things online (e.g. advertising offers; in-app purchases, pop-ups) and can recognise some of these when they appear online.<br>I can explain why lots of people sharing the same opinions or beliefs online do not make those opinions or beliefs true.<br>I can explain that technology can be designed to act like or impersonate living things (e.g. bots) and describe what the benefits and the risks might be.<br>I can explain what is meant by fake news e.g. why some people will create stories or alter photographs and put them online to pretend | I can explain how using technology can be a distraction from other things, in both a positive and negative way.<br>I can identify times or situations when someone may need to limit the amount of time they use technology e.g. I can suggest strategies to help with limiting this time. | I can describe strategies for keeping personal information private, depending on context.<br>I can explain that internet use is never fully private and is monitored, e.g. adult supervision.<br>I can describe how some online services may seek consent to store information about me; I know how to respond appropriately and who I can ask if I am not sure.<br>I know what the digital age of consent is and the impact this has on online services asking for consent. |

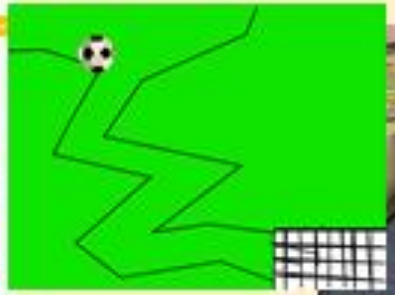
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | something is true when it isn't. | | |
| **5** | I can explain how identity online can be copied, modified or altered.<br>I can demonstrate how to make responsible choices about having an online identity, depending on context | I can give examples of technology-specific forms of communication (e.g. emojis, memes and GIFs) I can explain that there are some people I communicate with online who may want to do me or my friends harm. I can recognise that this is not my / our fault.<br>I can describe some of the ways people may be involved in online communities and describe how they might collaborate constructively with others and make positive contributions. (e.g. gaming communities or social media groups).<br>I can explain how someone can get help if they are having problems and identify when to tell a trusted adult.<br>I can demonstrate how to support others (including those who are having difficulties) online. | I can recognise online bullying can be different to bullying in the physical world and can describe some of those differences.<br>I can describe how what one person perceives as playful joking and teasing (including 'banter') might be experienced by others as bullying.<br>I can explain how anyone can get help if they are being bullied online and identify when to tell a trusted adult.<br>I can identify a range of ways to report concerns and access support both in school and at home about online bullying.<br>I can explain how to block abusive users.<br>I can describe the helpline services which can help people experiencing bullying, and how to access them (e.g. Childline or The Mix). | I can assess and justify when it is acceptable to use the work of others<br>I can give examples of content that is permitted to be reused and know how this content can be found online. | I can search for information about an individual online and summarise the information found.<br>I can describe ways that information about anyone online can be used by others to make judgments about an individual and why these may be incorrect | I can explain the benefits and limitations of using different types of search technologies e.g. voice activation search engine.<br>I can explain how some technology can limit the information I am presented with. I can explain what is meant by 'being sceptical';<br>I can give examples of when and why it is important to be 'sceptical'.<br>I can evaluate digital content and can explain how to make choices about what is trustworthy e.g. differentiating between adverts and search results.<br>I can explain key concepts including: information, reviews, fact, opinion, belief, validity, reliability and evidence.<br>I can identify ways the internet can draw us to information for different agendas, e.g. website notifications, pop-ups, targeted ads<br>I can describe ways of identifying when online content has been commercially sponsored or boosted, (e.g. by commercial companies or by vloggers, content creators, influencers).<br>I can explain what is meant by the term 'stereotype', how | I can describe ways technology can affect health and well-being both positively (e.g. mindfulness apps) and negatively.<br>I can describe some strategies, tips or advice to promote health and wellbeing with regards to technology.<br>I recognise the benefits and risks of accessing information about health and well-being online and how we should balance this with talking to trusted adults and professionals.<br>I can explain how and why some apps and games may request or take payment for additional content (e.g. in-app purchases, lootboxes) and explain the importance of seeking permission from a trusted adult before purchasing. | I can explain what a strong password is and demonstrate how to create one.<br>I can explain how many free apps or services may read and share private information (e.g. friends, contacts, likes, images, videos, voice, messages, geolocation) with others. I can explain what app permissions are and can give some examples. |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | 'stereotypes' are amplified and reinforced online, and why accepting 'stereotypes' may influence how people think about others.<br>I can describe how fake news may affect someone's emotions and behaviour, and explain why this may be harmful.<br>I can explain what is meant by a 'hoax'. I can explain why someone would need to think carefully before they share. | | |
| **6** | I can identify and critically evaluate online content relating to gender, race, religion, disability, culture and other groups, and explain why it is important to challenge and reject inappropriate representations online.<br>I can describe issues online that could make anyone feel sad, worried, uncomfortable or frightened.<br>I know and can give examples of how to get help, both on and offline.<br>I can explain the importance of asking until I get the help needed. | I can explain how sharing something online may have an impact either positively or negatively.<br>I can describe how to be kind and show respect for others online including the importance of respecting boundaries regarding what is shared about them online and how to support them if others do not.<br>I can describe how things shared privately online can have unintended consequences for others. e.g. screen-grabs.<br>I can explain that taking or sharing inappropriate images of someone (e.g. embarrassing images), even if they say it is okay, may have an impact for the sharer and others; and who can help if someone is worried about this | I can describe how to capture bullying content as evidence (e.g screengrab, URL, profile) to share with others who can help me.<br>I can explain how someone would report online bullying in different contexts. | I can demonstrate the use of search tools to find and access online content which can be reused by others.<br>I can demonstrate how to make references to and acknowledge sources I have used from the internet. | I can explain the ways in which anyone can develop a positive online reputation.<br>I can explain strategies anyone can use to protect their 'digital personality' and online reputation, including degrees of anonymity. | I can explain how search engines work and how results are selected and ranked.<br>I can explain how to use search technologies effectively. I can describe how some online information can be opinion and can offer examples.<br>I can explain how and why some people may present 'opinions' as 'facts'; why the popularity of an opinion or the personalities of those promoting it does not necessarily make it true, fair or perhaps even legal.<br>I can define the terms 'influence', 'manipulation' and 'persuasion' and explain how someone might encounter these online (e.g. advertising and 'ad targeting' and targeting for fake news). | I can describe common systems that regulate age related content (e.g. PEGI, BBFC, parental warnings) and describe their purpose.<br>I recognise and can discuss the pressures that technology can place on someone and how / when they could manage this.<br>I can recognise features of persuasive design and how they are used to keep users engaged (current and future use).<br>I can assess and action different strategies to limit the impact of technology on health (e.g. night-shift mode, regular breaks, correct posture, sleep, diet and exercise). | I can describe effective ways people can manage passwords (e.g. storing them securely or saving them in the browser).<br>I can explain what to do if a password is shared, lost or stolen. I can describe how and why people should keep their software and apps up to date, e.g. auto updates.<br>I can describe simple ways to increase privacy on apps and services that provide privacy settings.<br>I can describe ways in which some online content targets people to gain money or information illegally; I can describe strategies to help me identify such content (e.g. scams, phishing).<br>I know that online services have terms and conditions that govern their use. |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | I understand the concept of persuasive design and how it can be used to influences peoples' choices.<br>I can demonstrate how to analyse and evaluate the validity of 'facts' and information and I can explain why using these strategies are important.<br>I can explain how companies and news providers target people with online news stories they are more likely to engage with and how to recognise this.<br>I can describe the difference between online misinformation and dis-information.<br>I can explain why information that is on a large number of sites may still be inaccurate or untrue. I can assess how this might happen (e.g. the sharing of misinformation or disinformation). I can identify, flag and report inappropriate content. | | |

# High Expectations in Computing





## Supporting SEND and disadvantaged Children in Computing

- During input, use TAs or digital leaders with these children to mirror what class teacher is doing.
- Adjusted seating plan – during independent work, have less confident children in a group nearer an adult or pair up with more confident users.
- Use additional images, coloured printing/photocopying, large print, symbols.
- For recording – alternatives to 'written' recording offered, eg drawing, scribing, digital images, scaffolded tasks
- If using laptops, have that log on before the lesson with web page/document/app open.

## Encouraging challenge in Computing

- Ensure they become your 'Digital Leaders'. They can be your extra 'eyes and ears': making sure everyone has saved work in the correct place, supporting those that get stuck, asking them to spot good examples.
- Consider pairing – greater depth children get the opportunity to teach/model to a peer/class or work with other greater depth children to explore something further.
  Independent in application and presentation of ideas.
- Deeper questioning – you could take these from the TeachComputing lesson plans
- Set more open ended tasks – allow children to 'tinker'.
- Amendable slides in TeachComputing

# Vocabulary Work Bank KS1

| Year 1 | | |
|---|---|---|
| **Computing systems and networks - Technology around us** | **Creating media - Digital painting** | **Creating media - Digital writing** |
| technology, computer, mouse, trackpad, keyboard, screen, double-click, typing. | paint program, tool, paintbrush, erase, fill, undo, shape tools, line tool, fill tool, undo tool, colour, brush style, brush size, pictures, painting, computers | word processor, keyboard, keys, letters, type, numbers, space, backspace, text cursor, capital letters, toolbar, bold, italic, underline, mouse, select, font, undo, redo, format, compare, typing, writing. |
| **Data and information – Grouping** | **Programming A - Moving a robot** | **Programming B – Programming animations** |
| object, label, group, search, image, property, colour, size, shape, value, data set, more, less, most, fewest, least, the same | Bee-Bot, forwards, backwards, turn, clear, go, commands, instructions, directions, left, right, route, plan, algorithm, program. | ScratchJr, command, sprite, compare, programming, area, block, joining, start, run, program, background, delete, reset, algorithm, predict, effect, change, value, instructions, design. |

| Year 2 | | |
|---|---|---|
| **Computing systems and networks - Information technology around us** | **Creating media - Digital music** | **Creating media - Digital photography** |
| Information technology (IT), computer, barcode, scanner/scan | music, quiet, loud, feelings, emotions, pattern, rhythm, pulse, pitch, tempo, rhythm, notes, create, emotion, beat, instrument, open, edit. | device, camera, photograph, capture, image, digital, landscape, portrait, framing, subject, compose, light sources, flash, focus, background, editing, filter, format, framing, lighting, |

| Data and information – Pictograms | Programming A - Robot algorithms | Programming B - Programming quizzes |
|---|---|---|
| more than, less than, most, least, common, popular, organise, data, object, tally chart, votes, total, pictogram, enter, data, compare, objects, count, explain, attribute, group, same, different, conclusion, block diagram, sharing | instruction, sequence, clear, unambiguous, algorithm, program, order, prediction, artwork, design, route, mat, debugging, decomposition | sequence, command, program, run, start, outcome, predict, blocks, design, actions, sprite, project, modify, change, algorithm, build, match, compare, debug, features, evaluate, decomposition, code. |

## Vocabulary Work Bank KS2

| Year 3 | | |
|---|---|---|
| **Computing systems and networks – connecting computers** | **Creating Media – Desktop publishing** | **Creating Media - Stop-frame animation** |
| digital device, input, process, output, program, digital, non-digital, connection, network, switch, server, wireless access point, cables, sockets | text, images, advantages, disadvantages, communicate, font, style, landscape, portrait, orientation, placeholder, template, layout, content, desktop publishing, copy, paste, purpose, benefits. | animation, flip book, stop-frame, frame, sequence, image, photograph, setting, character, events, onion skinning, consistency, evaluation, delete, media, import, transition. |
| **Data and Information - Branching databases** | **Programming A - Sequencing sounds** | **Programming B – Events and actions in programs** |
| attribute, value, questions, table, objects, branching, database, objects, equal, even, separate, structure, compare, order, organise, selecting, information, decision tree. | Scratch, programming, blocks, commands, code, sprite, costume, stage, backdrop, motion, turn, point in direction, go to, glide, sequence, event, task, design, run the code, order, note, chord, algorithm, bug, debug, code. | motion, event, sprite, algorithm, logic, move, resize, extension block, pen up, set up, pen, design, action, debugging, errors, setup, code, test, debug, actions. |

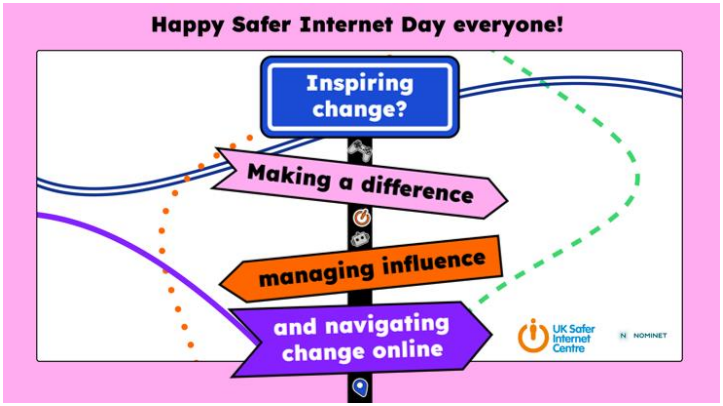
| Year 4 | | |
|---|---|---|
| **Computing systems and networks – Connecting computers - The internet** | **Creating Media – Audio production** | **Creating Media – Photo editing** |
| internet, network, router, security, switch, server, wireless access point (WAP), website, web page, web address, routing, web browser, World Wide Web, content, links, files, use, download, sharing, ownership, permission, information, accurate, honest, content, adverts | audio, microphone, speaker, headphones, input device, output device, sound, podcast, edit, trim, align, layer, import, record, playback, selection, load, save, export, MP3, evaluate, feedback. | image, edit, digital, crop, rotate, undo, save, adjustments, effects, colours, hue, saturation, sepia, vignette, image, retouch, clone, select, combine, made up, real, composite, cut, copy, paste, alter, background, foreground, zoom, undo, font. |
| **Data and Information - Data logging** | **Programming A - Repetition in shapes** | **Programming B - Repetition in games** |
| data, table, layout, input device, sensor, logger, logging, data point, interval, analyse, dataset, import, export, logged, collection, review, conclusion. | Logo (programming environment), program, turtle, commands, code snippet, algorithm, design, debug, pattern, repeat, repetition, count-controlled loop, value, trace, decompose, procedure. | Scratch, programming, sprite, blocks, code, loop, repeat, value, infinite loop, count-controlled loop, costume, repetition, forever, animate, event block, duplicate, modify, design, algorithm, debug, refine, evaluate. |

| Year 5 | | |
|---|---|---|
| **Computing systems and networks - systems and searching** | **Creating Media - Introduction to vector graphics** | **Creating Media – Video production** |
| system, connection, digital, input, process, storage, output, search, search engine, refine, index, bot, ordering, links, algorithm, search engine optimisation (SEO), web crawler, content creator, selection, ranking. | vector, drawing tools, object, toolbar, vector drawing, move, resize, colour, rotate, duplicate/copy, zoom, select, align, modify, layers, order, copy, paste, group, ungroup, reuse, reflection | video, audio, camera, talking head, panning, close up, video camera, microphone, lens, mid-range, long shot, moving subject, side by side, angle (high, low, normal), static, zoom, pan, tilt, storyboard, filming, review, import, split, trim, clip, edit, reshoot, delete, reorder, export, evaluate, share. |
| **Data and Information - Flat-file databases** | **Programming A - Selection in physical computing** | **Programming B - Making Quizzes** |
| database, data, information, record, field, sort, order, group, search, value, criteria, graph, chart, axis, compare, filter, presentation. | microcontroller, USB, components, connection, infinite loop, output component, motor, repetition, count-controlled loop, Crumble controller, switch, LED, Sparkle, crocodile clips, connect, battery box, program, condition, Input, output, selection, action, debug, circuit, power, cell, buzzer | Selection, condition, true, false, count-controlled loop, outcomes, conditional statement, algorithm, program, debug, question, answer, task, design, input, implement, test, run, setup, operator |

| Year 6 | | |
|---|---|---|
| **Computing systems and networks - Communication and collaboration** | **Creating media - Webpage creation** | **Creating Media 3D Modelling** |
| communication, protocol, data, address, Internet Protocol (IP), Domain Name Server (DNS), packet, header, data payload, chat, explore, slide deck, reuse, remix, collaboration, internet, public, private, one-way, two-way, one-to-one, one-to-many. | website, web page, browser, media, Hypertext Markup Language (HTML), logo, layout, header, media, purpose, copyright, fair use, home page, preview, evaluate, device, Google Sites, breadcrumb trail, navigation, hyperlink, subpage, evaluate, implication, external link, embed. | TinkerCAD, 2D, 3D, shapes, select, move, perspective, view, handles, resize, lift, lower, recolour, rotate, duplicate, group, cylinder, cube, cuboid, sphere, cone, prism, pyramid, placeholder, hollow, choose, combine, construct, evaluate, modify. |
| **Data and Information - Introduction to spreadsheets** | **Programming - Variables in games** | **Programming - Sensing movement** |
| data, collecting, table, structure, spreadsheet, cell, cell reference, data item, format, formula, calculation, spreadsheet, input, output, operation, range, duplicate, sigma, propose, question, data set, organised, chart, evaluate, results, sum, comparison, software, tools. | variable, change, name, value, set, design, event, algorithm, code, task, artwork, program, project, code, test, debug, improve, evaluate, share, assign, declare | Micro:bit, MakeCode, input, process, output, flashing, USB, trace, selection, condition, if then else, variable, random, sensing, accelerometer, value, compass, direction, navigation, design, task, algorithm, step counter, plan, create, code, test, debug. |

## Enrichment Activities

- Computing Days at Hurst
- Safer Internet Day / Week
- STEM Week


## Useful links

- Teachcomputing – Progression Map with links to each unit
- Project Evolve