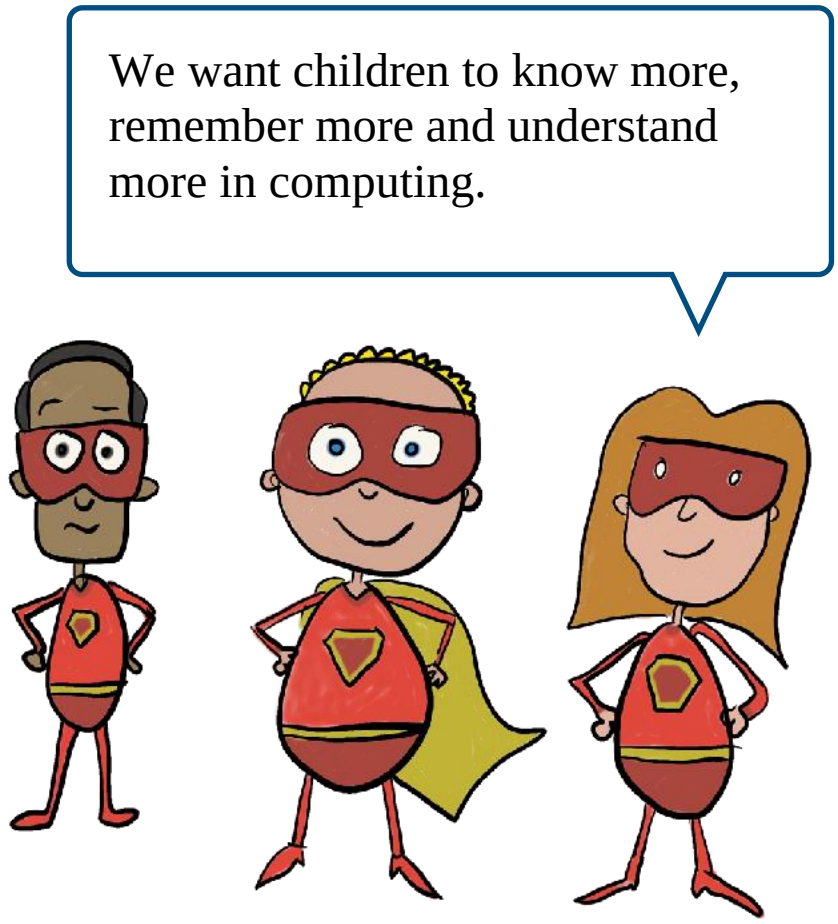
Great Orton Primary School

Intent, Implementation and Impact

Ensuring our children have super digital skills

Intent

Ensuring our children have super digital skills



Intent

What is our school's vision? Our vision is to support children in becoming creative, independent learners and ensure they develop a healthy relationship with technology. At our school we value and recognise the contribution that technology can make for the benefit of all pupils, staff, parents, governors and society. We strive to provide safe opportunities in computing to motivate, inspire and raise standards across the curriculum. Everyone in our school community will be equipped with the digital skills to meet developing technology with confidence, enthusiasm and prepare them for a future in an ever-changing world.

We want our children to be creators and innovators not just mere consumers of digital content. The idea of the children as digital creators is what underpins our planning and computing units. Our children are taught to understand that technology is an integral part of modern life and the key to the future is to harness and understand technology's potential. Computing is a constantly evolving subject that involves solving complex problems, being able to collaborate with others, learn from mistakes and refine solutions.

Our computing curriculum is designed to be easy to follow, with logical sequenced steps that will equip all children with the essential skills and knowledge they need to use technology safely and creatively. It has numerous cross circular links with art, mathematics, science and design and technology. When planning we ensure that children can build on their understanding, as each new concept is taught with opportunities for children to consolidate and reapply their skills and knowledge throughout the year. Each computing unit is planned to provide new challenges and variety, to ensure we keep the child's interest at a maximum. There is a strong emphasis on improving computing/digital vocabulary, core fundamental digital skills and computational concepts. Our computing units are organised into a series of hour long whole-class lessons, with the children working together on the same lesson content at the same time. Every unit have reflection and assessment points, this ensures that all children can process and articulate the concepts within the lesson before moving to the next activity, with no pupil left behind. The children create their own digital learning journals that record their understanding and tell their own story of the content they create. These journals and the content the children create illuminate their progression as digital storytellers, problem solvers and showcase mastery of computing. The journals are shared with parents, carers via tools like Seesaw.

Here at our school we believe safety is paramount. We promote and model a balanced digital life, recognising that amongst the many positives that technology has to offer, risks exist and children need to be taught to manage their digital lives properly. We strive to model and educate our children to use technology creatively, positively, responsibly and safely. Our curriculum supports the key aims of the government's Internet Safety Strategy (Digital Literacy / UK Council for Child Internet Safety (UKCCIS) framework) of supporting children to stay safe and make a positive contribution online, as well enabling teachers to develop effective strategies for understanding and handling online risks.

We believe there are core digital skills that children must possess if they are to meet our school's vision of independence, creativity and a healthy digital life.

- 'All children must have a basic understanding of coding and how the web works.'
- 'All children must be able to evaluate online information and be social media savvy.'
- 'All children must understand online safety rules and know how to report and block.'
- 'All children must be proficient with word processing and able to use cloud storage.'
- 'All children must be able to create visually engaging content/presentations in order to present learning to others.'
- 'All children must have experience of online collaboration and using communication tools.'
- 'All children must be taught the concept of personal archiving and possess their own digital portfolio of work.'

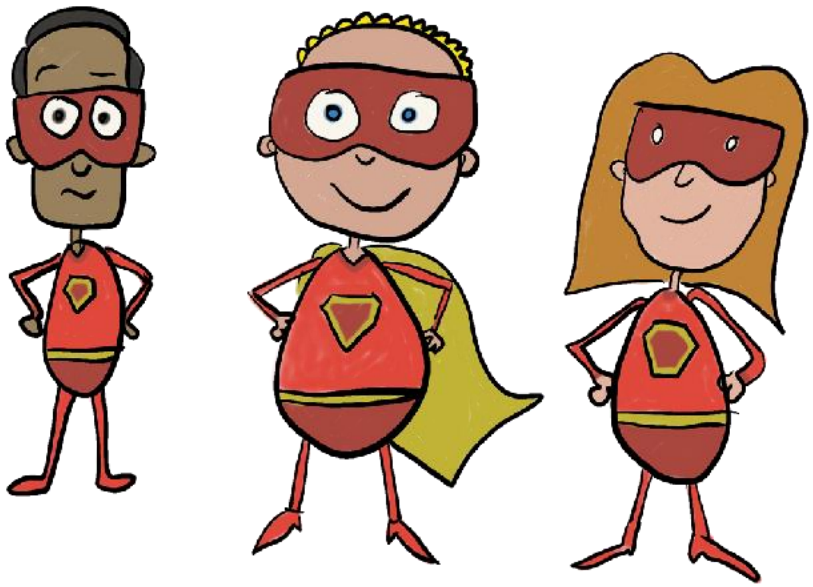
We also strive to go beyond these essential digital skills and the computer program of study. When teaching computing, we include at least two effective learner objectives to be the focus for the year. These are in addition to the specific objectives in each Computing activity. We choose learners who exemplify these qualities to receive the end of unit certificates and computing wow moment cards.

Ability to work independently	Ability to work with each other	Resilience and Challenge	Creativity	Academic Progress
I do not rely on the teacher or other children for support. I can take independent notes or photographs at appropriate times to support my learning.	I am willing to work with others. I share thoughts and ideas with the rest of the group or class. I communicate appropriately and put forward my ideas within a group. I can give others constructive feedback on their ideas.	I attempt any task and try hard. I ask relevant questions of the teacher. I engage in different activities and small competitions, accepting and embracing challenges. I see difficult tasks as a challenge, something I must work at and learn from.	I can come up with ideas and use these ideas to help myself. I am keen to express my ideas in different ways. I take other's ideas into account alongside my own. I use a wide variety of sources effectively.	I am enthusiastic about the lesson and happy to contribute. I am keen to improve my knowledge and understanding. I understand how to improve.

Implementation

Ensuring our children have super digital skills

Our vision is to support children in becoming creative, independent learners and ensuring children have a healthy relationship with technology.



Implementation

At our school the requirements of the Computing Curriculum are taught through half-termly units, where the children have access to their own iPad. The curriculum at our school is carefully mapped out to ensure that pupils acquire knowledge, vocabulary and skills in a well-thought out and progressive manner, with each teacher following the Knowsley Computing Scheme of Work and progression document. The Knowsley scheme highlights the knowledge, skills and vocabulary for each year group and is progressive from year to year. New learning is based upon what has been taught before and prepares children for what they will learn next. Every unit has a clear end point and an end product which children work towards on their learning journey. The teaching style that we adopt is as active and practical as possible although at times we do give children direct instruction on how to use hardware and software. We teach computing both discretely and cross curricular when clear links with other subjects are present.

Our Computing units and progression model is broken down into four strands that make up our computing curriculum. These are Essential Skills, Computer Science, Information Technology and Digital Literacy.

Essential Skills: ensure the children have the core basic skills to use multiple devices, this is designed to promote independence.

Computer Science: underlines the knowledge and skills relating to computational thinking, coding, algorithms and networks.

Information Technology: underlines the knowledge and skills relating to digital communication, creating multimedia content and data representation/handling.

Digital Literacy: underlines the knowledge and skills relating to online safety and technology in society.

We participate in annual events such as national Safer Internet Day, anti-bullying week and technology themed competitions.

Computing subject leader

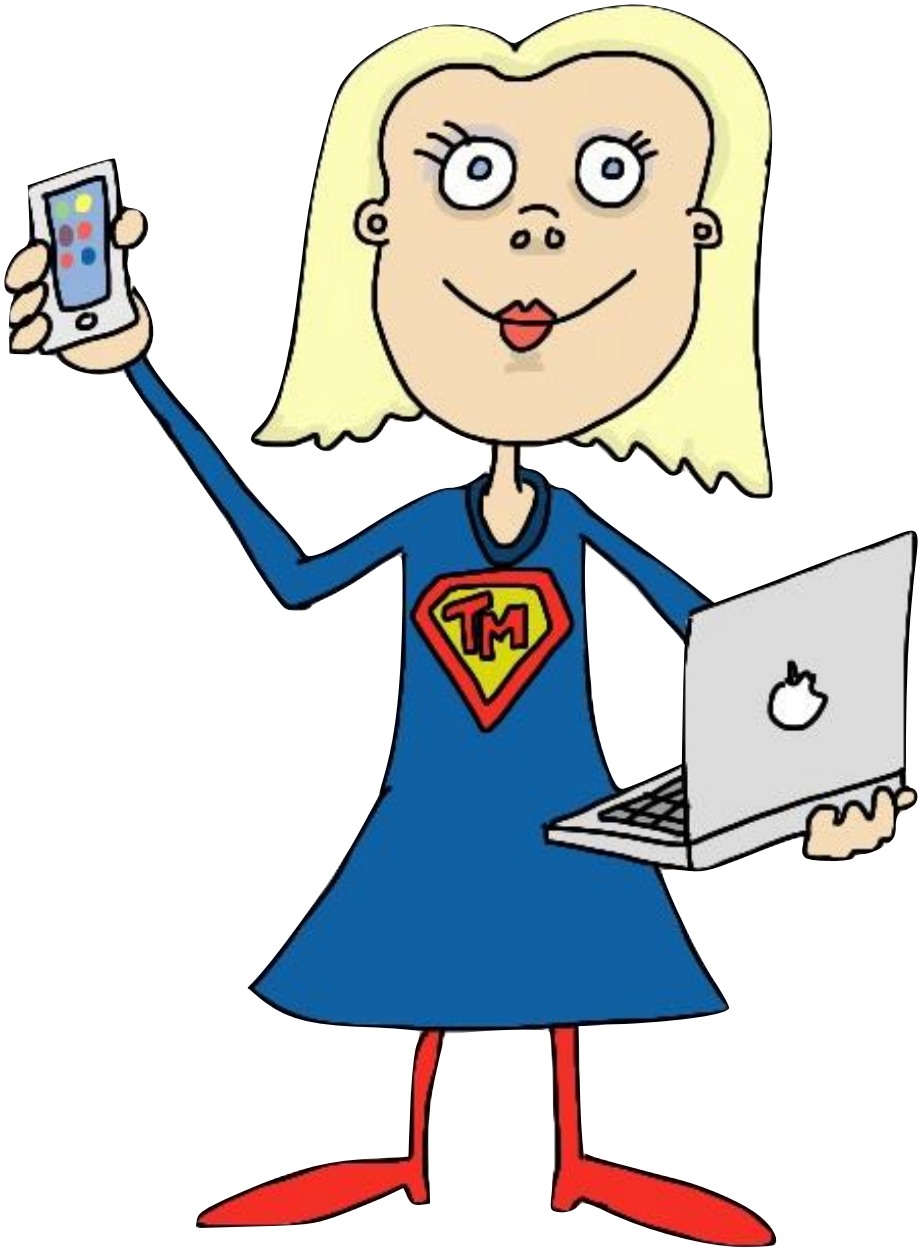
Our school believes the role of the Computing subject leader is key in the successful implementation of our curriculum. We aim for all subject leaders to have the knowledge, expertise and practical skill to be able to lead their areas effectively. In order for us to be able to deliver the best and most up to date curriculum we provide staff with high quality CPD in their subject specific areas of leadership or teaching role. This may include attending nationwide courses on the curriculum, assessment of research. We aim to give staff the expert knowledge required to deliver the subjects that they teach. Ongoing professional development and training is available for staff to ensure that our challenging curriculum requirements can be met.

Subject leaders and leaders at all levels, including Governors regularly review and quality assure the subject areas to ensure that it is being implemented well and coverage and breadth and balance is adequate.

Home Learning Links

The children at our school have access to a wide variety of resources that enable them to continue the learning of Computing at home. For example; Seesaw/Doodle and TT Rockstars, Hour of Code and Scratch Edu accounts. Through these the children are able to complete set tasks and save their work virtually so that it can be shared both in school and at home with teachers and parents.

We also have a School Teams account. Here they can communicate with their teachers and peers to further extend their learning opportunities. See Online Safety Policy and Procedures Policy/eSafety.



Computing Vocabulary

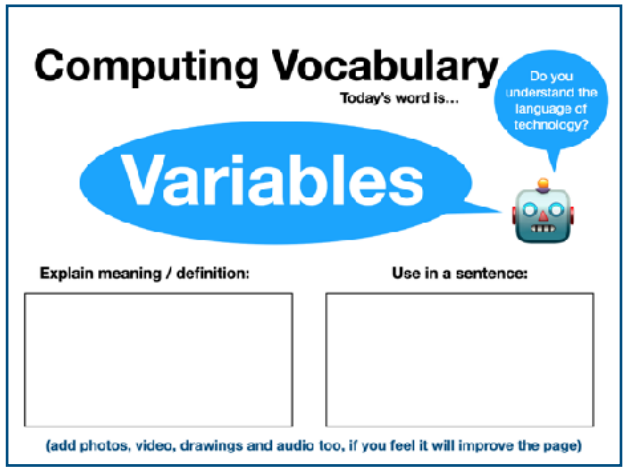
Here at our school we aim to develop children's working vocabulary and have a carefully mapped out progression.

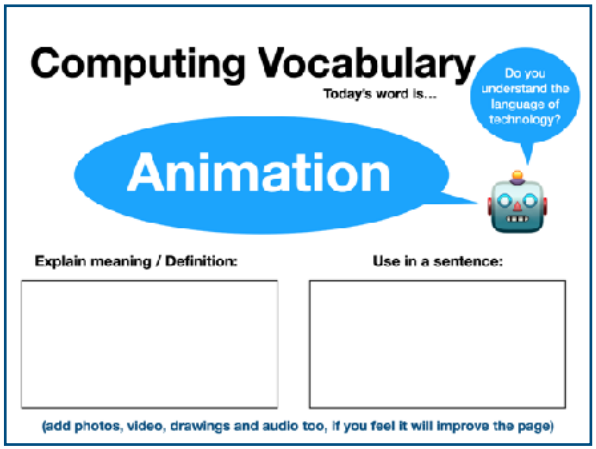
Children are excited to learn new words and take delight in being able to use them in their day to day working in the classroom and at home.

Teaching Key Computing Vocabulary

Knowsley CLCs
Primary Computing Scheme of Work
Inspire a lifelong love of play, design, code, and invention with technology.

Year Group	Key Vocabulary: This is a guide to key computing vocabulary for year groups or Key Stage.
Foundation	Algorithm/instructions, sequence, camera, robot, QR code, sequence, share, technology, control, Google, information, internet, computer, iPad/tablet, app (application), keyboard, button, printer, save, zoom.
Year 1	3D, algorithm, program, debug, design, emoji, search, selection, website, personal information, link, menu, icon, trusted adult, online, sign in, game, wireless (Wifi), online bullying, landscape, portrait, Bluetooth, download, frame, processor, green screen, hard drive, illustration, log in, tool, send, follow, digital, communicate.
Year 2	Browser, computer networks, data, computational thinking, execute/run, input, output, software, World Wide Web (WWW), password, username, interact, images, facts, scan, chat, post / re-post, copyright, backdrop, repeat / loop, characters, avatars, fictitious/fake, evaluation, publish, trust, stroke, template, reputation, identity, digital book (eBook/ePub).
Year 3	Block, palette, code/coding, command, decomposition, sprite, stage, condition, control block, costume, digital content, simulation, hyperlink, attachment, URL, blog/blogging, consequences, illustrator, untrusted, cyberbully, cyberbullying, reliable, MegaByte, GigaByte, report, sceptical, verify, fake news, soundtrack, VR (virtual reality), font, shortcut, shots, 360° Video, authenticate, multimedia.
Year 4	Logical reasoning, audio, selection, page ranking, hacker, repetition (sometimes referred to as 'iteration' in upper KS2), script, scripts area, secure (https), PEGI, netiquette, conditional, scene, filters, griefing, storyboard, cloud computing, positive online communication, online persona, digital footprint, animation, age restrictions, social network, screenshot, screencast.
Year 5	Abstraction, vlog, YouTuber, IP address, pixels, vector, HTML, CSS, services, ISP, LAN, TCP/IP, variables, hub, peripheral, bandwidth, CEOP, ChildLine, cache, harassment, plagiarism, infringe copyright, illegal downloads, streaming, blocking, victim, cookie, junk mail, RAM / ROM, USB, ZIP, augmented reality, bit & bytes, upload, score, podcast, edit.
Year 6	Antivirus, new media, collaboration, visual coding, text based coding, adware, trojan, feedback, bot, boolean, checksum, server, firewall, generalisation, security updates, plug in, pop up blocker, scams, phishing, location based settings, in app purchasing, trolling, sexting, exclusion, doxxing, catfishing, flaming, fabotage, creeping, dissing, ghosting FTP, filtering, malware, screen time, balanced lifestyle, configuring.





Computing Progression

We have created a comprehensive progression document to help staff at each key stage understand the child's learning journey through computing at our school. It demonstrates how to best embed and cover every element of the computing curriculum as knowledge/skills statements build year on year to deepen and challenge our learners with core programs and apps.

Below is an example from the (CS) Coding section of our progression document.

On the right is an example of our schools digital skills document, which helps track the basic technical ability children should possess with apps and devices.

(CS) Coding:

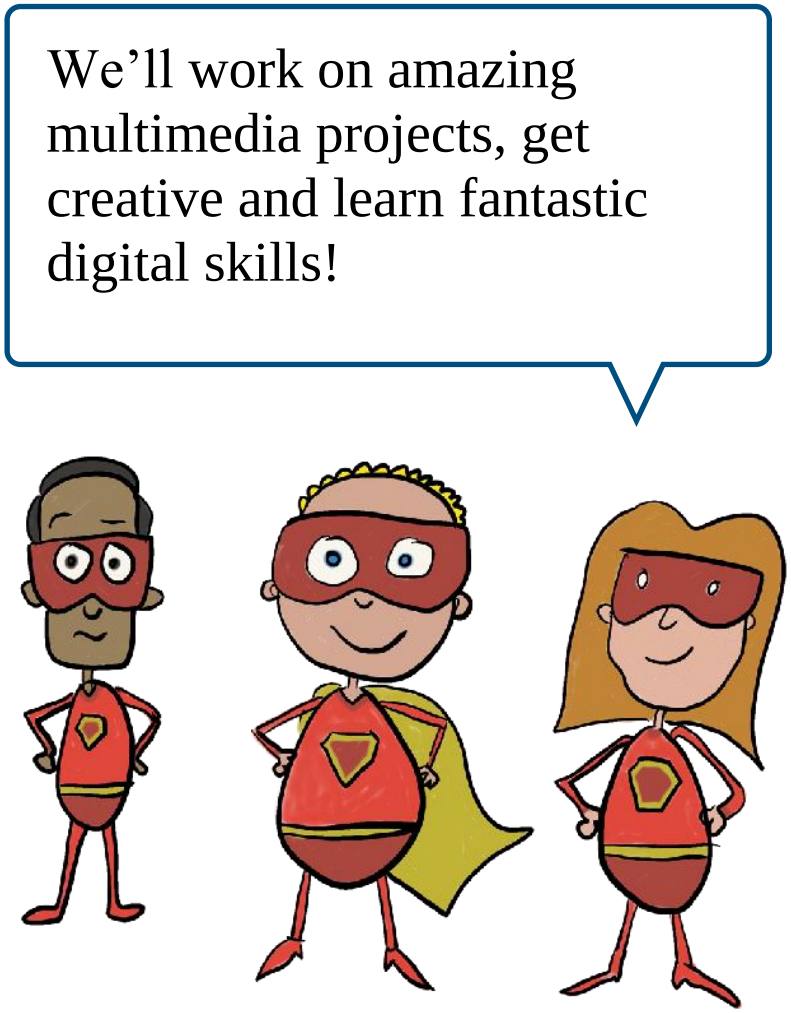
Key Stage 1: Create and debug simple programs.
Key Stage 2: Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
The children learn: to experiment controlling a range of 'toys' using remote controls and do this with purpose and direction.	The children learn: to create a simple program and correct mistakes (debug).	The children learn: to independently identify and fix a 'bug' in multiple programs. to create a simple program that includes a repeat x times loop. the difference between inputs and outputs.	The children learn: to create their own sprite in Scratch/Scratch Jr. about sequencing commands and adding a repeat command in a program. how to refine/improve a program by using the repeat command. how to create a variable. to create a program that contains selection, inputs and outputs.	The children learn: about the structure of a program and learn to plan in logical, achievable steps. to write a complex program, incorporating features such as selection, inputs, repetition, variables and procedures. attempt to debug their own programs and corrects/debugs errors in code.	The children learn: to create their own complex game within Scratch or other block based coding app that uses variables, event handling, selection ("If" and "Then"), procedures and repetition (loops) to increase programming possibilities.	The children learn: about complex programs and are encouraged to persevere when solving difficult problems even if the solution is not obvious. about executing and adapting common commands using a text-based language e.g. Python/Javascript/SwiftPlaygr ound.

Teaching and Learning

On the following pages you will find the story of teaching and learning with technology across EYFS, Key Stage 1 and Key Stage 2.

Teacher's planning is differentiated to meet the range of needs in each class. A wide range of teaching and learning styles are employed to ensure all children are sufficiently challenged. Children may be required to work individually, in pairs or in small groups according to the nature of the task. Different outcomes may be expected depending on the ability and needs of the individual child.



Computer Science in EYFS

pattern recognition

sequence & instructions/algorithms

computational thinking

problem solving

debug

remote control & programable toys

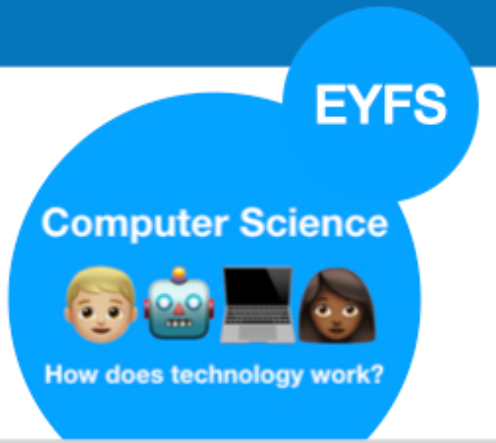
coding

predictions

logical reasoning

What will children be learning?

Play, problem solving, instructions, cause and effect



The children in our Early Years provision will be exploring basic computational thinking through film, music and dance. They will learn about the sequencing of instructions and events, directional language and using programmable toys.

EYFS framework

Understanding the World:

People and communities, the world and technology. Practitioners should support children in experiencing a range of technologies – using cameras, photocopiers, CD players, tape recorders and programmable toys, in addition to computers.

Information Technology in EYFS

microphones and cameras

digital books & create simple documents

images, video, audio & drawing

using a keyboard & mouse

taking photos

log on / search the web

harnessing technology

skills

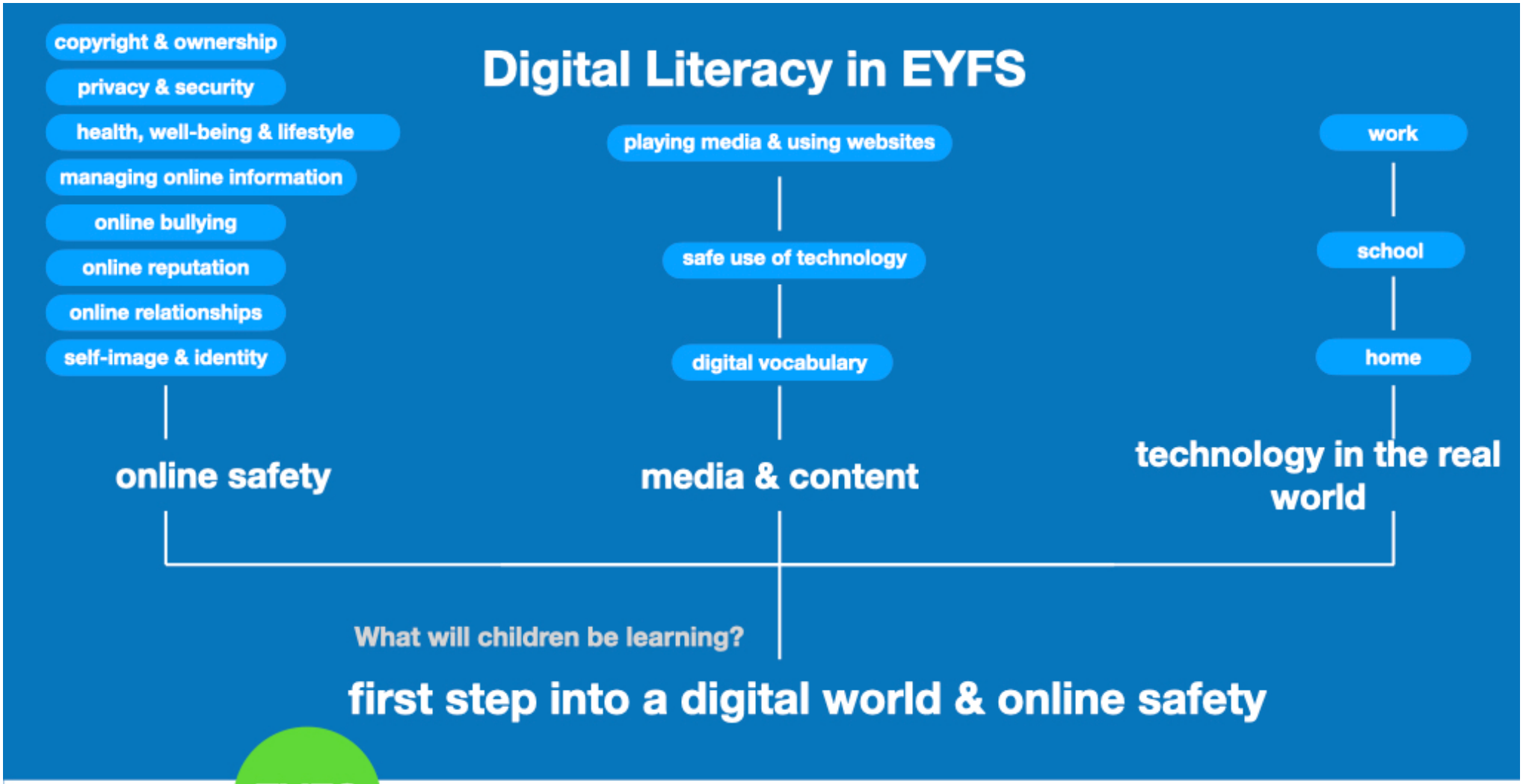
What will children be learning?

Fun, exploring apps and technology

The children in our Early Years provision will be exploring how technology is an everyday part of their learning and world around them. The children are taught to use devices, equipment, software/apps confidently and introduce to the reasons why technology is used. They will learn about handling information, problem solving, taking photographs, video recording and expressive skills.

EYFS framework

Understanding the World: Understanding the World: People and communities, the world and technology. Practitioners should support children in experiencing a range of technologies – using cameras, photocopiers, CD players, tape recorders and programmable toys, in addition to computers.



EYFS

Digital Literacy

How our digital lives work?

The children in our Early Years provision will be exploring internet safety, personal information and technology in the real world. Our teaching supports the key aims of the government's Internet Safety Strategy (Digital Literacy) of supporting children to stay safe and make a positive contribution online, as well as enabling teachers to develop effective strategies for understanding and handling online risks. The framework has been produced by the UK Council for Child Internet Safety (UKCCIS).

EYFS framework

Understanding the World: People and communities, the world and technology. Practitioners should support children in experiencing a range of technologies – using cameras, photocopiers, CD players, tape recorders and programmable toys, in addition to computers.

Computer Science in Key Stage 1

pattern recognition

sequence & algorithms

debug

programs & robots

predictions

computational thinking
problem solving

coding

logical reasoning

What will children be learning?

Problem solving, creating simple algorithms and programs

KS 1

Computer Science

How does technology work?

In Key Stage 1 the children will learn about algorithms, following them and creating them. They will learn about turning algorithms into programs on digital devices including programmable robots and toys. They will create and debug simple programs (using coded animation and storytelling) and use logical reasoning to predict the outcomes and errors.

Programme of Study
Computer Science KS1:

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.

Information Technology in Key Stage 1

creative media e.g animation

digital books & create documents

images, video, audio, data & drawing

harnessing technology

using a keyboard & mouse

networks, clouds & local storage

log on / search the web

files & folders

What will children be learning?

exploring apps, create documents and media, files and folders, & basic digital skills

KS 1

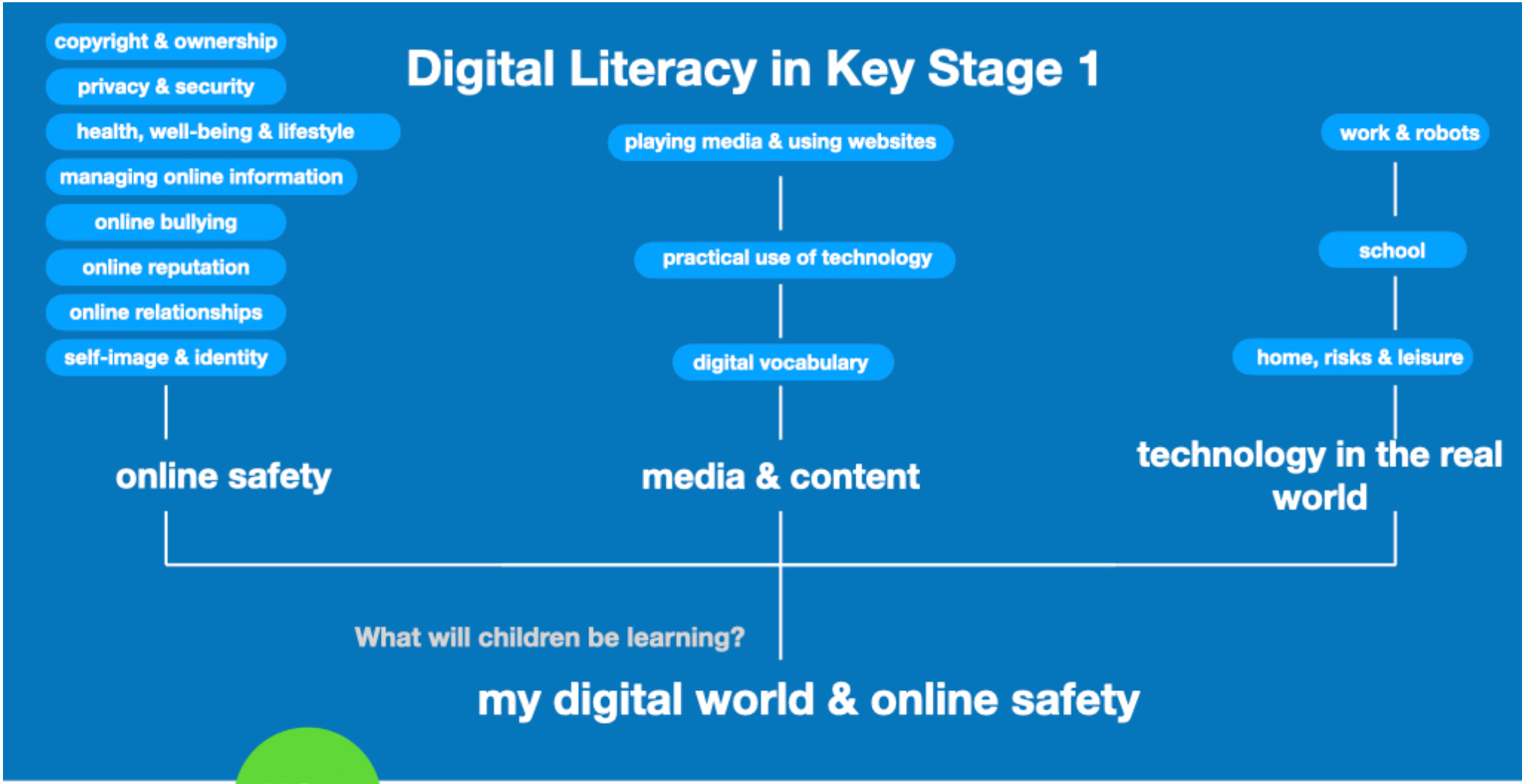
Information Technology

How can I use digital tools to tell my story?

In Key Stage 1 the children will learn how to confidently use a range of digital devices, peripherals and apps. They will create and edit digital content, learn about files, folders, saving work and handling information. They will use a range of apps to develop computing creativity by creating and illustrating digital books, editing digital images, recording/editing videos, producing digital music and geometrical art. They will learn to collaborate, communicate, problem solving and present their knowledge using digital media. They will explore the common uses of information technology beyond school.

Programme of Study

Information Technology KS1: Use technology purposefully to create, organise, store, manipulate and retrieve digital content.



KS 1

Digital Literacy

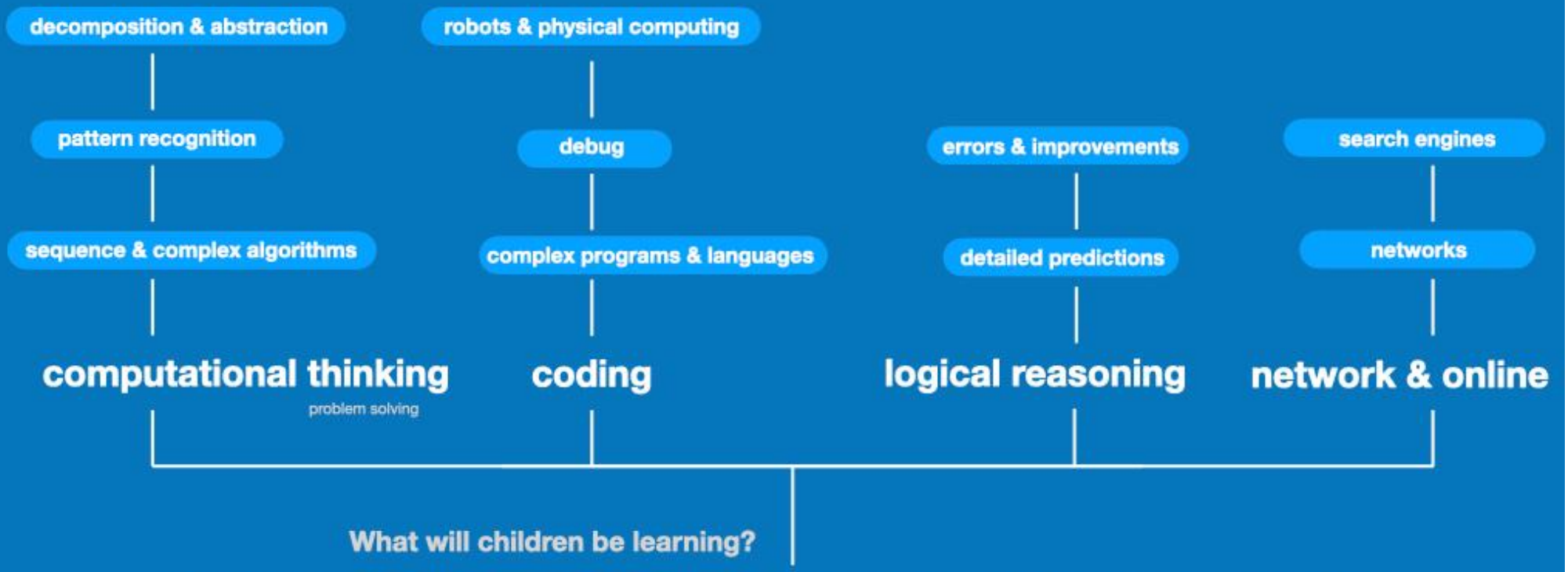
How our digital lives work?

The children in Key Stage 1 will be exploring technology in the real world, internet safety, personal information and where to go for help and support when they have concerns about content or contact on the internet or other online technologies. Our teaching supports the key aims of the government's Internet Safety Strategy (Digital Literacy) of supporting children to stay safe and make a positive contribution online, as well as enabling teachers to develop effective strategies for understanding and handling online risks. The framework has been produced by the UK Council for Child Internet Safety (UKCCIS).

Programme of Study
Digital Literacy KS1:

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.

Computer Science in Key Stage 2



KS 2

Computer Science

How does technology work?

In Key Stage 2 the children will build on their knowledge and design skills to create and debug complex algorithms and programs, including controlling or simulating physical systems and create interactive toys. They will use a variety of programming apps, master visual programming and be introduced to text-based programming. They will use sequence, selection, and repetition in programs, use logical reasoning to explain how some simple algorithms work and correct errors in algorithms and programs. They will be exploring how computer games work then develop interactive games and simple mobile apps. They will explore computational thinking at greater depth, which include algorithmic thinking, evaluation, decomposition, abstraction and generalisation. Children will be taught to understand computer networks, crack codes, how the internet works and the opportunities the web can offer for communication and collaboration. They will learn about using search technologies effectively, learn how search results are selected and ranked and how this can be manipulated.

Programme of Study
Computer Science KS2:

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.

Information Technology in Key Stage 2

creative projects using multiple devices/apps

data/information analyse & presentation

new technology, images, video, audio & drawing

harnessing technology

advanced web skills

networks, clouds & local storage

log on / search the web

online

What will children be learning?

create & share digital content. understand information and data

KS 2

Information Technology

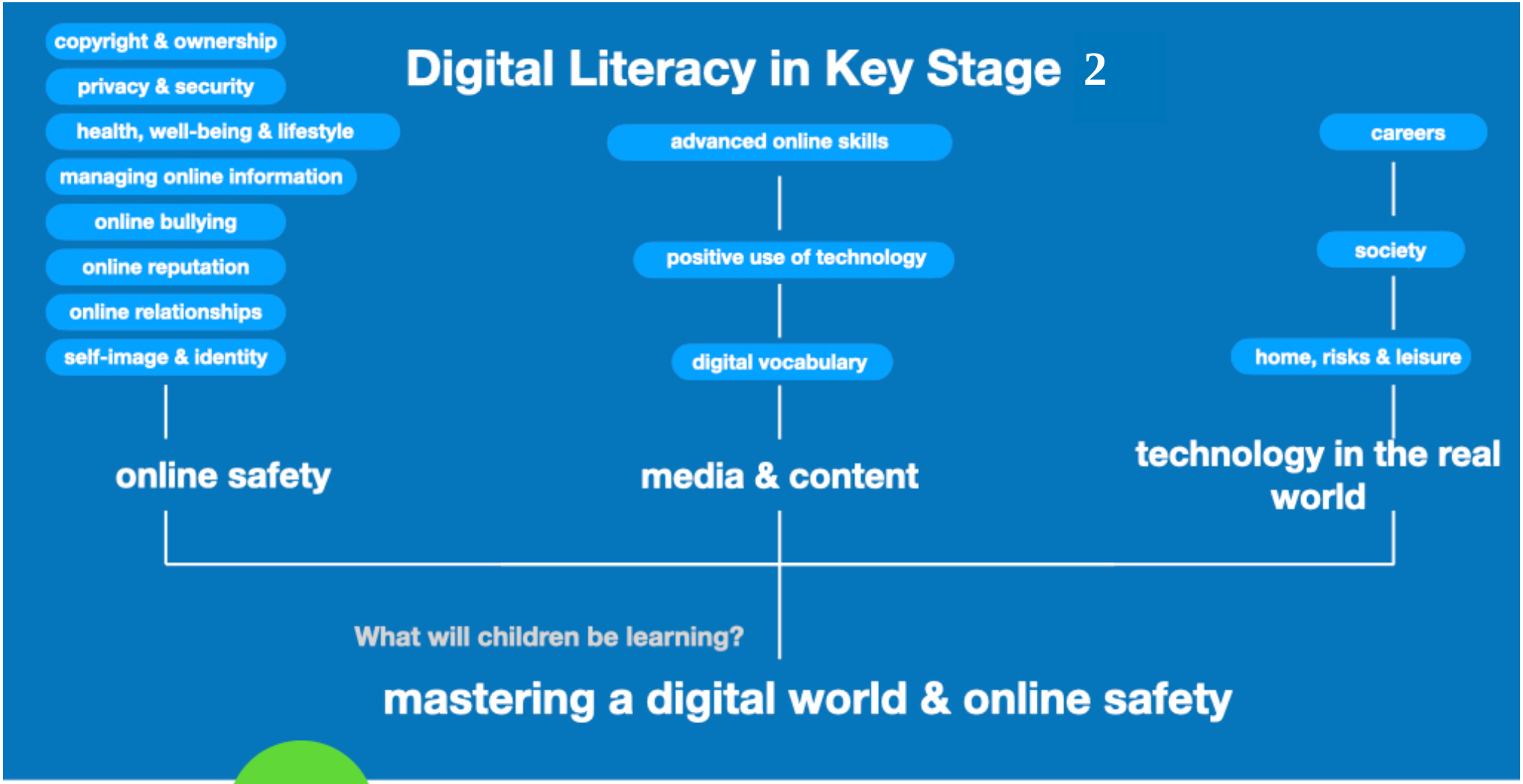
How can I use digital tools to tell my story?

In Key Stage 2 the children will learn to express their creativity by planning and creating multimedia content and in doing so learn about combining software/apps (including internet services) and media types on a range of digital devices. They will learn advanced digital skills by creating video, manipulating images, publish on the web, content for mobile devices, how to present work, data handling and collaborate on project based activities. They will learn research skills and how to be discerning in evaluating digital content. They will learn about the latest technology trends and themes, learn about digital careers and develop project management skills. They will investigate computer networks (including school network), internet services and the Web.

Programme of Study

Information Technology KS2:

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.



KS 2

Digital Literacy

How our digital lives work?

The children in Key Stage 2 will continue to explore at a deeper level the themes of; technology in society, internet safety, risks, personal information, help and support, digital content, digital communication, social media and a healthy balanced lifestyle. They will create online safety digital resources and learn about communication and collaboration by collectively creating content, use email, create and write online content. Our teaching supports the key aims of the government's Internet Safety Strategy (Digital Literacy) of supporting children to stay safe and make a positive contribution online, as well as enabling teachers to develop effective strategies for understanding and handling online risks. The framework has been produced by the UK Council for Child Internet Safety (UKCCIS).

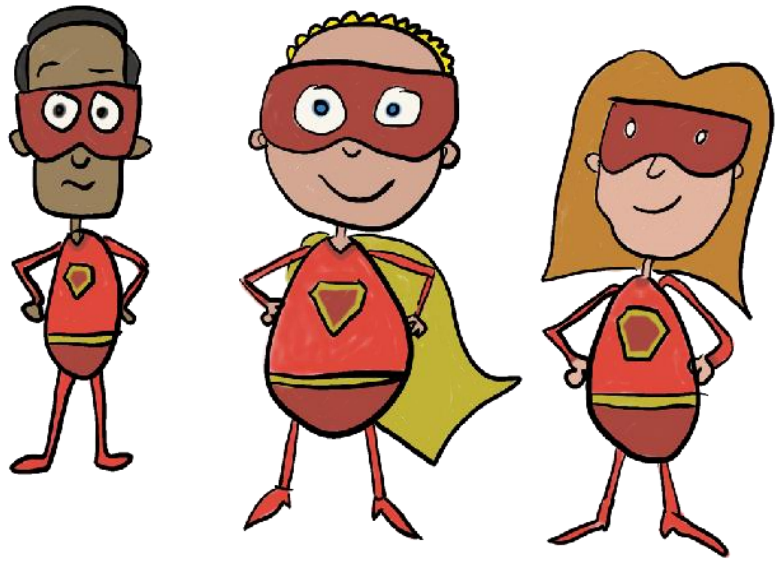
Programme of Study
Digital Literacy KS2:

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

Impact

Ensuring our children have super digital skills

The biggest impact we want on our children is that they understand the potential and capabilities of technology and that they are also aware of how to maintain a safe and healthy digital life.



Impact

In our Computing curriculum the children revisit each objective several times, via different themes helping to ensure the best results are achieved. We have developed ‘What to observe in learning’ grids to support the monitoring of our children’s learning expectations. A sample of the Year 3 ‘What to observe in learning’ grid can be found on the next page. Our school encourages discussions between staff and pupils to help the children best understand their progress and their next steps. We also encourage pupils to document their own learning in pupil journals. These journals can also be used to showcase and celebrate computing work as well as providing evidence of the pupil’s knowledge and digital skills.

We constantly monitor to ensure the children have learnt the things we’ve taught them and if they are struggling, we can introduce additional support the next time they encounter that objective. Impact is about how we know what you do is making a difference. If children are keeping up with the curriculum, they are deemed to be making good or better progress.

We measure the impact of our curriculum through the following methods:

- Pupil discussions and interviewing the pupils about their learning (pupil voice).
- Pupil journals and assessment/feedback on content creation.
- Governor monitoring with our subject computing link governor.
- Moderation staff meetings with opportunities for dialogue between teachers.
- Photo evidence of the pupils practical learning.
- Video analysis through recording of performance or practical learning in lessons.
- Pupil self reflection.
- A reflection on standards achieved against the planned outcomes (progression/what to observe in learning).
- Learning walks and reflective staff feedback (teacher voice).
- Dedicated Computing leader time.
- Formative and summative approaches.

Year 3 Progression - Computer Science

Knowsley CLCs
Primary Computing Scheme of Work
Inspire a lifelong love of play, design, code, and invention with technology.

Computing Strand: Computer Science	Statement	What to Observe in Learning		
		Working towards expectations	Meeting expectations	Exceeding expectations
(CS) Computational Thinking: Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts	I can plan, create and debug programs.	The child can explain what an algorithm is and give examples. The child understands that an algorithm can be used to plan out a program. The child can create an algorithm needed for a simple task in the form of a flow chart. The child can explore an online simulation.	The child can create a detailed flow diagram using the correct symbols. The child can turn an algorithm into a simple program on a digital device. The child keeps testing the program and can recognise when it needs to be debugged. E.g. the child can create a basic game using Hopscotch / Tynker / Scratch / Scratch Jr and fix errors. The child can explain the rules behind the simulation and how they can be realistic / represent reality.	The child can independently plan, create a simple game, fix errors, make improvements after testing and explain how they did it to others. The child can use simulations to spot patterns and test predictions.
	I can use decomposition to help me solve computing problems.	The child understands that decomposition means to break an open-ended problem up into smaller parts and this will make it easier to solve.	The child can demonstrate how they solved a problem by breaking it into smaller parts. The child can plan out a program and break it into smaller steps when tackling the structure, incorporating sequencing, commands and procedures. E.g. the child can plan what code might be required to create a simple game.	The child can recognise that different solutions exist for the same problem and can discuss alternative solutions.
(CS) Coding: Use sequence, selection, and repetition in programs; work with variables and various forms of input and output	I can use sequence, selection, repetition and variables in programs.	The child can understand that programs are made up of sequences of instructions in the appropriate order.The child can put programming commands into a sequence to achieve a specific outcome. E.g. the child can use a sequence of coding blocks to make a sprite move in Scratch.	The child can create my own sprite in Scratch/ Scratch Jr. The child can add a repeat command in a program. The child can refine/ improve a program by using the repeat command. E.g. the child can independently write programs to draw different regular shapes using the repeat command.	The child can create a variable. The child can explain why variables are used in programs and give examples. Eg. Timer, life counter or points. The child can create a procedure in Scratch (group of commands) to do a specific task, draw a specific shape.
	I can work with various forms of input and output.	The child can talk about the parts of a computer, including inputs and outputs. e.g. keyboard and mouse/trackpad or touch screen) and output (screen and speakers) for a computer.	The child when viewing a program can identify inputs and outputs. The child can create a program that contains inputs and outputs. E.g. when a button is pressed the program plays a sound.	The child can create a program with multiple types of inputs and outputs. E.g. the program uses the keyboard, mouse, noise detection as the input. The program uses sound, movement or text as the output.
(CS) Logical Reasoning: Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	I can use logical reasoning to predict and correct errors in algorithms and programs.	The child can make predictions about what an algorithm will do. The child can make predictions about what a program will do.	The child can detect potential problems in an algorithm which could result in unsuccessful programming. The child when running a program, can describe what went wrong and offer ideas on how this could be fixed/ debugged. The programs can be the child's own or ones provided for them.	The child can debug problems and confirm that they have fixed them by testing the new version of their program.