Computing Knowledge Progression

The National Curriculum Aims and opening paragraph for each key stage state the knowledge that children need to learn throughout Key Stage 1 and 2. This knowledge is broken down into year group objectives in this knowledge progression document.

Using the document:

The National Curriculum content is broken into 3 areas: Computer Science, Information Technology and Digital Literacy

Each of these areas then has 'To know' or **'To know how to'** statements for the children to meet within their given year group, including vocabulary to be taught in each unit. These statements can be used as learning objectives and to aid assessment. 'To know' is content knowledge. **'To know how to'** is **procedural** knowledge.

These statements are not progressive within one year group, but they are progressive throughout the year groups and the colours help map the progression. The lightest colour in computer science in Year 1, links to the same computer science colour in Year 2 and then Year 3, and so on, providing a progression throughout school. If the colour is no longer included, then it is expected that the children have acquired that knowledge.

Content and **procedural** building blocks!

Digital Citizen

responsible safety respect appropriate behaviour **analysing** **responding**

Computer Science

programming algorithm devices **developing**

Information Technology

software data/information **collaborate** **communicate** **analysing**

Digital Literacy

networks Digital Citizen

In Tiny Steps, children will learn about different technologies that they can use including technological toys. They will learn how to operate these toys. Children will learn about different types of technology used at school and at home. Children will learn how to use age appropriate technology safely.

TS

Computer Science

To begin to know about technological toys.

To begin to know how to operate technological toys.

Information technology

To begin to know about different types of technology.

To begin to know how to use different types of technology.

Digital Literacy

To begin to know what technology I can use safely.

To begin to understand how to ask for help when using technology.

In Nursery, children will learn about different technologies including toys that require input to make them operate. Children will learn about different types of technology and the uses in different environments. Children will learn about different technologies they are able to use safely.

N

Computer Science

To know about technological toys.

To know how to operate technological toys.

To know that buttons are one way to input instructions to make something change.

To know how to press different buttons to change what a technological toy does.

Information technology

To know different types of technology.

To know how to use simple technology.

To know technology is used in different places such as home and school.

Digital Literacy

To know what technology I can use safely.

To know how to ask for help when using different technologies.

In Reception, children will learn about how to input simple instructions into mechanical/digital toys. Children will learn about different types of technology that can be used and the different uses. Within digital literacy, children develop practical skills in the safe use of ICT within the classroom and at home.

REC

Computer Science

To know that some toys follow instructions.

To Know how to make one instruction with a digital toy.

To know we can change what a digital toy does by what we input.

To know how to change the instruction to change the output.

Information technology

To know that technology is used for a purpose.

To know how to use real world devices such as Ipads and Cameras.

To know different features of a computer.

To know how to use a simple program on a computer.

Digital Literacy

To know that I need to be careful when using different technologies.

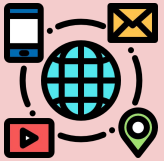
To know how to keep safe online by developing practical skills.

In Year 1, children will learn about algorithms and how to write their own successful algorithm for a purpose. Children will explore the technology available to them in their lives and understand how digital content is useful to them. Building on the foundations from EYFS, children will develop their understanding of personal information, how to keep this private while beginning to explore how to report inappropriate content.

Y1

Computer Science

- To know what an algorithm is
- **To know how to input a simple program (including plugged and unplugged)**
- To know that programs need precise instructions
- **To know how to write a simple program with precise instructions**



Information technology

- To know that information technology beyond school can help us
- **To know how to recognise if something beyond school uses information technology**
- To know that digital content can be changed and why it might be helpful to do this
- **To know how to change pre-made digital content**

Digital Literacy

- To know what personal information is
- **To know how to keep personal information private**
- To know what is inappropriate online content and to know when to report it
- **To begin to know how to recognise and report inappropriate online content**

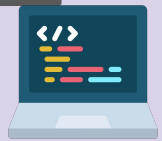
To know the technical vocabulary for Computer Science.

To know the technical vocabulary for Information Technology.

To know the technical vocabulary for Digital Literacy.

In Year 2, children will learn about debugging and use logical reasoning to solve problems in their programming. They will explore the technology available to them in school and understand how we can use technology to help us to be more efficient. Children will focus on creating safe usernames and strong passwords and be confident at identifying and reporting inappropriate content online.

Y2



Computer Science

To know what debugging is and how it affects how a program runs

To know how to identify and debug a simple program

To know what logical reasoning is (in relation to how a simple program runs)

To know how to use logical reasoning to predict the behaviour of a simple program

Information technology

To know that information technology within school can help us

To know how to recognise if something within school uses information technology

To know that technology can be used to create, organise, store and retrieve digital content

To know how to use technology to create, store, organise and retrieve digital content

Digital Literacy

To know what usernames and password are and why they're important

To know how to create and use safe usernames and passwords

To know that the different ways that I can respond to inappropriate content

To know how to recognise and report inappropriate online content

To know the technical vocabulary for Computer Science.

To know the technical vocabulary for Information Technology.

To know the technical vocabulary for Ditgital Literacy.

In Year 3, the children will learn how algorithms work on different devices and will create their own simple program which replicates an everyday item. They will become effective researchers by understanding the concepts of a search engine and will utilise this knowledge to collect and present information. Children will be able to successfully identify appropriate behaviour online and know how to report these concerns.

Y3

Computer Science

- To know that algorithms can run through various input and output devices
- **To know how to use various forms of input and output devices** (beebots and micro:bits)
- To know that programs are used to control everyday devices
- **To know how to create a program that creates/replicates everyday devices** (toy, traffic light)

Information technology

- To know that software can be be used to collect and present data
- **To know how to select, use and combine softwares to accomplish given goals (collecting and presenting data/information)**
- To know that what I search will change the outcome
- **To know how to use search technologies effectively**

Digital Literacy

- To know what is safe and unsafe behaviour when using technology
- **To know how to be safe online, whilst being respectful and responsible**
- To know that there are a range of ways to report concerns online about inappropriate behaviour.
- **To know how to report inappropriate behaviour online.**

To know the technical vocabulary for Computer Science.

To know the technical vocabulary for Information Technology.

To know the technical vocabulary for Digital Literacy.

In Year 4, children will learn about decomposition and how this can be applied to fixing their programming. They will collaborate and communicate effectively using the World Wide Web and continue to build on their knowledge from Year 3 by exploring how search engines rank their results. Children will successfully identify acceptable and unacceptable behaviour as well as understanding what makes a hacker, a spam or a scam.

Y4

Computer Science

To know that programs can be broken into smaller parts (decomposition) and to know why it's useful

To know how to use decomposition to solve problems within programs

To know that algorithms and programs can contain errors that can be fixed

To know how to detect errors in a program and use logical reasoning to correct them

Information technology

To know that the world wide web allows us to collaborate and communicate

To know how to communicate and collaborate effectively for a specific purpose

To know that results are selected and ranked by search technologies

To know how to use filters to find specific information

Digital Literacy

To know what is acceptable and unacceptable behaviour online

To know how to recognise acceptable and unacceptable behaviour, whilst being respectful and responsible

To know what hackers, scams and spam are

To know how to identify hackers, scams and spams

To know the technical vocabulary for Computer Science.

To know the technical vocabulary for Information Technology.

To know the technical vocabulary for Digital Literacy.

In Year 5, children will learn about sequencing and looping and how this helps us create a successful program. Children will become efficient researchers by using appropriate software for their goals while also differentiating between reliable and unreliable content. They will understand the impact of your digital footprint and how our behaviour can be tracked online: children will understand how to change their preferences and how to protect themselves from online tracking.

Y5

Computer Science

- To know that programs use sequencing
- **To know how to use sequencing effectively in programs**
- To know that programs can include loops
- **To know how to use loops effectively in programs**

Information technology

- To know that software can be used to analyse and evaluate data
- **To know how to use a variety of softwares to evaluate and analyse data for a given goal**
- To know what is reliable and authentic content
- **To know how to evaluate digital content for reliability and authenticity**

Digital Literacy

- To know that I create a digital footprint and that it can impact on your life
- **To know how to identify positive and negative digital footprints and to know how to make changes to my own digital footprint**
- To know that websites track our online behaviour through cookies. (analytical and tracking)
- **To know how to allow/deny cookies and how to change my preferences**

To know the technical vocabulary for Computer Science.

To know the technical vocabulary for Information Technology.

To know the technical vocabulary for Digital Literacy.

In Year 6, children will become efficient programmer by understanding how selection and variables can be used successfully to develop your program. They explore the differences between the internet and the World Wide Web and know how databases are used with these. Children will become confident digital citizens by understanding what plagiarism is and why is is important to credit others for their work as well as knowing how their actions can impact others, especially through the use of social media and chat platforms.

Y6

Computer Science

- To know that selection can impact a program
- **To know how to use selection within a program**
- To know that variables can impact on what a program does
- **To know how to use variables in programs to achieve a specific goal**

Information technology

- To know the difference between the internet and the world wide web
- **To know how to create a working computer network**
- To know that databases store information
- **To know how to select, create and use databases for a specific goal**

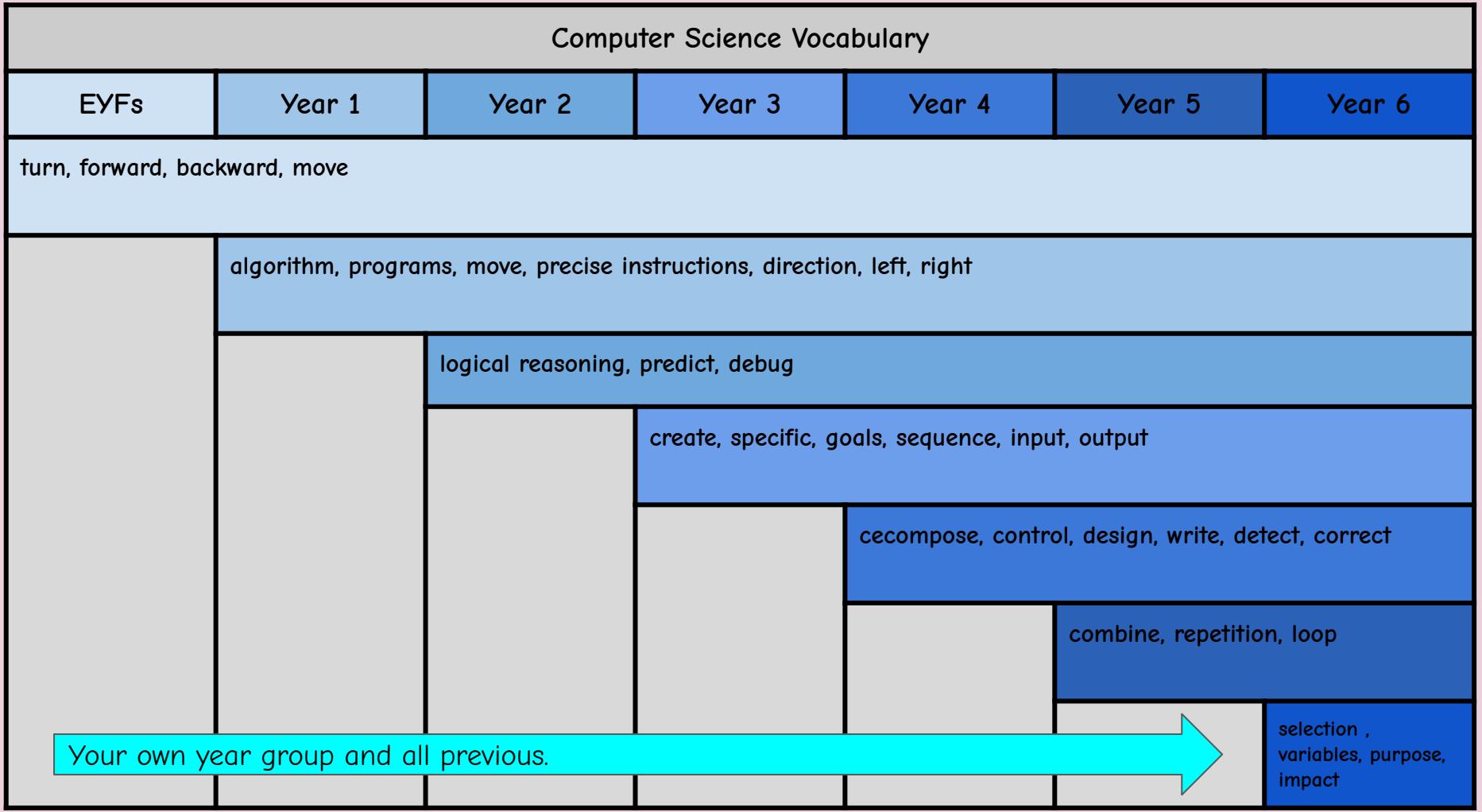
Digital Literacy

- To know what plagiarism and copyright is and the impact it has
- **To know how to research from someone else's work and to know how to identify copyright free material**
- To know that my actions online impact others
- **To know how to be a responsible digital citizen (including social media)**

To know the technical vocabulary for Computer Science.

To know the technical vocabulary for Information Technology.

To know the technical vocabulary for Digital Literacy.


Computer Science Vocabulary
EYFs
Year 1
Year 2
Year 3
Year 4
Year 5
Year 6
turn, forward, backward, move
algorithm, programs, move, precise instructions, direction, left, right
logical reasoning, predict, debug
create, specific, goals, sequence, input, output
cecompose, control, design, write, detect, correct
combine, repetition, loop
selection , variables, purpose, impact
Your own year group and all previous.

Information Technology Vocabulary

EYFs	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Phone, i-pad, tablet,						
	Information technology, computer, laptop, chromebook, tablet, mouse, touchpad, keyboard, website, click, scroll, type, enter, digital Names of devices in the wider world - fridge, television, cashpoint, tills, etc.					
		organise , create, store, retrieve Names of devices within school - printer, interactive whiteboard etc.				
			Collect, present, select, combine, software, data, internet, search, search engine			
				World wide web, collaborate, communicate, results, rank, filter, specific		
					analyse , evaluate, digital content, reliability, authenticity	
						Compare, computer network, router, server, database, storage, The Cloud

Your own year group and all previous.

Digital Literacy Vocabulary

EYFs	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
sharing, online, danger						
	Private, personal, information, inappropriate, report, trusted					
		Username, password, respond, safe				
			respectful , responsible, report, contact, stranger			
				Acceptable, unacceptable, scam, hackers, danger		
					Digital footprint, traceable, impact, track, online activity, cookies, advertisement, virus	
						plagiarism, copyright, free, digital citizen, influence, social media

Your own year group and all previous.