

Computer Science Overview

Computer Science and L4L

In L4L themes are designed to provide students with a coherent knowledge and understanding of computing with links to Maths, Science and many other core subjects. Students are taught the key principles of computing which covers information and computation, how systems work and how. Our curriculum enables students to become digitally literate allowing them to use express and develop their ideas through information communication technology.

The Threads of Learning have been purposely designed and created to ensure themes have been placed so that students are able to build on their skills effectively throughout across KS3 to prepare them for the workplace and become active participants of the digital world we live in.

Content and Skills

Throughout the L4L KS3 curriculum and our use of the technological competencies, students analyse, classify digital data responsibly and safely. Design write and evaluate programs. The promotion of literacy and the use of key information computing technology terminology allows students to communicate their knowledge in increasingly sophisticated ways.

Key Outputs and Assessments

In L4L, key competencies are identified by Heads of Department. These skills are essential to be developed throughout KS3 to ensure they success at Key Stage 4. As a result of this, the key competencies are assessed three times throughout an academic year (in the Autumn, Spring and Summer term) to ensure students are making progress and moving closer to mastering that skill.

Students are provided with colour-coded feedback sheets which provide a current working at grade and target for the next piece of work.

Below is an example of our competency assessment programme for Computer Science in Year 7 and 8, which shows the key competencies and themes being assessed and revisited throughout the year:

Year 7

TL.PU.01 Presenting Information Using ICT (Word, PowerPoint, Websites, Media)		
1 Citizen Me Microsoft Corporate Citizenship	2 Growing Spreadsheets	3 Silent Movies Editing

Year 8

T.CS.03 Hardware and Networks		
1 Grand Designs Web Design	2 Da Vinci Image Representation	3 Apps for Good

Staff Training

The L4L staff are supported with the delivery of the KS3 Computer Science curriculum by regular CPD sessions, planning meetings with subject specialist staff, pre-reading material, learning walks and sharing of best practice. Subject specialist staff also provide training sessions, recorded video tutorials and drop-in sessions in order to upskill all staff in the delivery of Computer Science.

National Curriculum Coverage Table

NC Content	Year Covered	Theme Covered	Lesson Title
Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems.	7	I Robot	Micro Bit
	8	Grand Design	Focus Day: Garden Turf App
	8	Please Sir	Focus Day: Coding and Computer Science
Understand several key algorithms that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem.	7	Growing	Spreadsheets
Use 2 or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables or arrays]; design and develop modular programs that use procedures or functions.	7	I Robot	Microbit
	8	Grand Design	Focus Day: Garden Turf App
	8	Please Sir	Focus Day: Coding and Computer Science
Understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming; understand how numbers can be represented in binary and be able to carry out simple operations on binary numbers [for example, binary addition, and conversion between binary and decimal].	8	Please Sir	Victorian Inventors George Boole
	8	Please Sir	Focus Day: Coding and Computer Science
	8	Please Sir	Victorian Inventors George Boole
Understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems.	7	Focus Day	Year 7 Computer Science FD
	8	Grand Designs	Web Designing
	8	Da Vinci	Image Representation

Understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits.	7	I Robot	Coding
	8	Please Sir	Victorian Inventors George Boole
	8	Please Sir	Focus Day: Coding and Computer Science
Undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users.	7	Citizen Me	Microsoft Corporate Citizenship
	7	Silent Movies	Editing
	7	Silent Movies	The Language of Silent Movies and Storyboarding
	8	Pudding Lane	News report
	8	Growing	Spreadsheets
	8	Grand Designs	Web Designing
	8	Over The Top	Propaganda
9	America Land of Free	Skyscrapers and Technology	
create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability.	7	Citizen Me	Microsoft Corporate Citizenship
	8	Growing	Spreadsheets
	8	Grand Designs	Budgeting and Mortgages
	8	Grand Designs	Web Designing
	9	Over The Top	Propaganda
		America Land of Free	Skyscrapers and Technology

Understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct, and know how to report concerns	7	Citizen Me	Microsoft Corporate Citizenship
	8	Silent Movies	Editing
	8	Silent Movies	The Language of Silent Movies and Storyboarding

Competency Table

Competency	NC Link	Year	Theme	Lesson
TL.PU.01 Presenting Information Using ICT (Word, Powerpoint, Websites, Media)	undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users	7	Citizen Me	Microsoft Corporate Citizenship
		7	Silent Movies	Editing
		7	Silent Movies	The Language of Silent Movies and Storyboarding
	create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability	8	pudding Lane	News report
		8	Growing	Spreadsheets
		8	Grand Designs	Web Designing
		8	Over The Top	Propaganda
9	America Land of Free	Skyscrapers and Technology		
TL.PU.02 Analysing Information Using ICT (Excel)	Understand several key algorithms that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem	7	Growing	Spreadsheets
TL.PU.03 Storing Information Using ICT (Sharepoint, File Management, Databases)				
TL.PU.04 Using technology safely, respectfully, responsibly and securely.	understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct, and know how to report concerns	7	Citizen Me	Microsoft Corporate Citizenship
TL.CS.01 Logic and Algorithms (Boolean Logic, Binary)	Understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming; understand	7	I Robot	Coding
		8	Please Sir	Victorian Inventors George Boole

	<p>how numbers can be represented in binary, and be able to carry out simple operations on binary numbers [for example, binary addition, and conversion between binary and decimal]</p> <p>Understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits</p>	8	Please Sir	Focus Day: Coding and Computer Science
T.CS.02 Programming (Java)	<p>Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems.</p> <p>Use 2 or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables or arrays]; design and develop modular programs that use procedures or functions.</p>	7	I Robot	Micro Bit
		7	I Robot	Micro Bit
		8	Grand Design	Focus Day: Garden Turf App
		8	Please Sir	Focus Day: Coding and Computer Science
T.CS.03 Hardware and Networks	Understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems.	7	Focus Day	Year 7 Computer Science FD
		8	Grand Designs	Web Designing
		8	Da Vinci	Image Representation