



East Midlands Academy Trust

Primary Computing Curriculum Overview



Why Teach Computing?

Technology is everywhere and will play an important part in students' lives, therefore, we aim to prepare our learners for their future by giving them the opportunities to gain knowledge and develop skills that will equip them for an ever-changing digital world. Knowledge and understanding of ICT is of increasing importance for children's future both at home and for employment.

Our Computing curriculum focuses on a progression of understanding in:

- digital literacy
- computer science
- information technology
- online safety to ensure that children become competent in safely using, as well as understanding, technology.

These strands are revisited repeatedly through a range of themes during children's time in school to ensure the learning is embedded and skills are successfully developed. Our intention is that Computing also supports children's creativity and cross curricular learning to engage children and enrich their experiences in school.

E-Safety

E-Safety is an element of the computing curriculum which will be taught both within the curriculum and as a discrete subject. Teaching will promote positive uses of technology and will acknowledge the large role that technology plays in children's everyday lives. Children will understand how to use technology safely, respectfully and responsibly to deal with a variety of situations which may occur in or out of school. Children will be able to identify acceptable and unacceptable behaviours and will have a variety of strategies they are familiar with to report concerns about content and contact.

Curriculum Organisation

There are four themes taught throughout each year. The big ideas feature across most themes but are predominantly focussed on as follows.

Primary Themes			
Computing Systems and Networks (1 Half Term)	Programming (1 Term)	Data and Information (1 Half Term)	Creating Media (1 Term)
Networks	Programming	Data & Information	Creating Media
Computing Systems	Algorithms		
	Design & Development		
Safety & Security	Impact of Technology		Effective Use of Tools

Pedagogy

Underpinned by the research carried out by the National Centre for Computing Education, our curriculum is based around 12 key pedagogical principles. These principles allow teachers to use a range of strategies to deliver computing effectively, encouraging computation thinking and problem-solving.

Lead with concepts	Structure lessons	Make concrete
Unplug, unpack, repack	Work together	Read and explore first
Create projects	Model everything	Get hands-on
Challenge misconceptions	Add variety	Foster program comprehension

Assessment

Formative assessment opportunities are built into every unit ...

The 10 Big Ideas

Curriculum maps detail the sequencing of substantive knowledge to enable pupils to build schemata of important concepts over time through ten 'big ideas'

	NW	Networks	Understand how networks can be used to retrieve and share information and come with associated risks
	CM	Creating Media	Select and create a range of media including text, images, sounds and video
	DI	Data & Information	How is data stored, organised and used to represent real world artefacts and scenarios
	DD	Design & Development	The activities involved in planning, creating and evaluating computing artefacts
	CS	Computing Systems	What is a computer, how do its constituent parts function together as a whole
	IT	Impact of Technology	How individuals, systems and society as a whole interact with computer systems
	AL	Algorithms	Being able to comprehend, design, create and evaluate algorithms
	PG	Programming	Creating software to allow computers to solve problems
	ET	Effective Use of Tools	Use software tools to support computing work
	SS	Safety & Security	Understanding risks when using technology and how to protect individuals and systems



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Substantive Curriculum Content Overview



Networks	Creating Media	Data and Information	Design and Development	Computing Systems	Impact of Technology	Algorithms	Programming	Effective Use of Tools	Safety and Security
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	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Autumn 1	Programming A Moving a robot Writing short algorithms and programs for floor robots and predicting program outcomes	Creating Media Making Music Using a computer as a tool to explore rhythms and melodies, before creating a musical comparison	Data and Information Branching databases Building and using branching databases to group objects using yes/no questions.	Data and Information Data logging Recognising how and why data is collected over time, begin using data loggers to carry out an investigation.	Creating media Vector drawing Creating images in a drawing program by using layers and groups of objects.	Programming A Variables in games Exploring variables when designing and coding a game
	AL DD IT PG	CM DD ET	DD DI ET	CS DI ET	CM DD DI ET	DD PG
Autumn 2	Creating Media Digital painting Choosing Appropriate tools in a program to create art and making comparisons with working non-digitally.	Data and Information Pictograms Collecting data in tally charts and using attributes to organise and present data on a computer.	Creating Media Stop-frame animation Capturing and editing digital still images to produce a stop-frame animation that tells a story.	Programming A Repetition in shapes Using a text-based programming language to explore count-controlled loops when drawing shapes.	Programming A Selection in physical computing Exploring conditions and selection using a programmable microcontroller.	Computing systems and networks Internet communication Recognising how the WWW can be used to communicate and be searched to find information.
	CM DD ET	DD ET SS	CM DD ET	AL ET PG	CS DD PG	CS ET IT NW DI
Spring 1	Data and Information Grouping data Exploring object labels, then using them to sort and group objects by properties.	Programming A Robot algorithms Creating and debugging programs and using logical reasoning to make predictions.	Programming A Sequencing Sounds Creating sequences in a block-based programming language to make music.	Creating Media Photo editing Manipulating digital images and reflecting in the impact of changes and whether the required purpose is fulfilled.	Data and Information Flat-file databases Using a database to order data and create charts to answer questions.	Creating Media Webpage creating Designing and creating webpages, giving consideration to copyright, aesthetics, and navigation.
	DI	AL DD PG	AL CM DD ET PG	CM DD ET IT	DD DI ET	CM DD ET IT NW SS
Spring 2	Programming B Programming animations Designing and programming the movement of a character on screen to tell stories.	Creating Media Digital Photography 2 Capturing and changing digital photographs for different purposes.	Creating Media Desktop Publishing Creating documents by modifying text, images, and page layouts for a specified purpose.	Programming B Repetition in games Using a block-based programming language to explore count-controlled and infinite loops when creating a game.	Programming B Selection in quizzes Exploring selection in programming to design and code an interactive quiz.	Programming B Sensing Designing and coding a project that captures inputs from a physical device.
	AL DD PG	CM CS DD ET	CM DD ET IT	AL DD PG	AL DD PG	CS DD PG
Summer 1	Creating Media Digital writing Using a computer to create and format text, before comparing to writing non-digitally.	Programming B Programming quizzes Designing algorithms and programs that use events to trigger sequences of code to make an interactive quiz.	Programming B Events and actions in programs Writing algorithms and programs that use a range of events to trigger sequences of actions.	Creating Media Audio editing Capturing and editing audio to produce a podcast, ensuring that copyright is considered.	Creating Media Video editing Planning, capturing, and editing video to produce a short film.	Data and Information Introduction to spreadsheets Answering questions by using spreadsheets to organise and calculate data.
	CM DI ET	DD PG	DD ET PG	CM CS DD DI ET	CM CS DD ET SS	CM DI ET PG
Summer 2	Computer systems and networks Technology around us Recognising technology in school and using it responsibly.	Computing Systems and networks Technology around us Recognising technology in school and using it responsibly.	Computing systems and networks Connecting computers Identifying that digital devices have inputs, processes, and outputs, and how devices can be connected to make networks.	Computing systems and networks The internet Recognising the internet as a network of networks including the WWW, and why we should evaluate online content.	Computer systems and networks Sharing information Identifying and exploring how information is shared between digital systems.	Creating Media 3D Modelling Planning, developing and evaluating 3D computer models of physical objects.