Computing

Elements Curriculum – SEE, DO, GET Model

SEE (Intent)
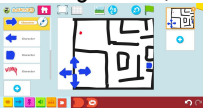
Through a broad, balanced, ambitious curriculum we aim to give all the children of Elements Primary School the knowledge, skills, resilience, and ambition to become confident world changers at a local, national and global level.

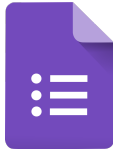| The 'Elements' of Elements *'Our Values'*		
Community & Family	**Positivity & Happiness**	**Creativity & Innovation**
- Inclusion - Positive self identity - Sense of belonging - Tolerance, Respect and Peace - Citizenship - Sense of Contribution - Roles & Responsibility - Synergy (Habit 6) - Seek First to understand then to be understood (Habit 5) - Diversity - Democracy	- Think Win-Win (Habit 4) - Mutual Respect 'Can Do' Attitude - Good Mental Health - Sharpen the Saw (Habit 7) - Relationships - Carrying your own weather - Celebration and praise	- Invention - Self Expression - Design - Research & Development - Inspiration - Meeting a need - Embrace the Arts - Metacognition - Technology Enhanced Learning "Thinking outside the box" - Rule breaking
Aspiration & Pride	**Personal Leadership & Resilience**	**We are creating...**
- Dreaming Big - Aiming High - Self Belief - Self Confidence - Giving credit where it is due - Congratulate and uplift others - Begin with the end in mind (Habit 2) - Leaving a legacy 'Painting a masterpiece'	- The 7 Habits of Highly Effective People - Evaluative Practice - Problem Solving - Interdependence 'Have a go' attitude - Collaboration - Change management - Personal reflection - Emotional Bank Account - Seeking and meeting challenge	A Culture World Changers History Makers

Questions in Computing

Global Influences
'Our Global Responsibilities'

Citizenship	Environment	Health
What communities am I part of? What makes my community special? What can I offer my community? How can I show respect to my community? What do we mean by 'digital citizenship'? Whose responsibility is the online world?	How does the digital world protect the environment? What is the best tool to help us research habitats? How can we track climate?	How have computers helped the world of medicine? What are some of the negative impacts of technology on mental health? What are some of the negative impacts of technology on physical health? Can search engines help us look after our health better?

Sustainability	Creativity
How can we track climate change? Are we doing enough to protect our oceans? How has coding and algorithms affected production? How can we use coding to support sustainability?	Who are the key innovators in computer science? How has computing celebrated global diversity? Has the birth of the internet changed our culture? How has technology brought the world together? How has technology changed the arts and the way things are created?

Computing Vehicle Overview

Block	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
The Famous Five		The Journey of James Cook (Coding)				AstroPi Flight (Coding)	Collaborative Story Writing (Digital Literacy)
Designed and Built			All about London (Digital Literacy)				
Lost in a Book		Tokyo (Digital Literacy)	Making a Story (Coding)	Presentation (Digital Literacy)	Adventure Stories (Digital Literacy)		
Listen							Make a Band! (Digital Literacy, coding)
Change the World				Climate Change Game (Coding)	The Water Issue (Digital Literacy)	FairTrade Surveys (Digital Literacy)	

Coverage of Computing Concepts

Year 1

The Famous Five: The Journey of James Cook
Coding (Bee Bots)

Abstraction	Pattern Seeking	Algorithms	Logic	Decomposition
		Algorithms		Decomposition

Lost in a Book: Tokyo
Digital Literacy (Google search engine, Google Docs)

Abstraction	Pattern Seeking	Algorithms	Logic	Decomposition
Abstraction			Logic	

Year 2

Designed and Built: All about London
Digital Literacy (Google search engine, Google Docs, Google Slides)

Abstraction	Pattern Seeking	Algorithms	Logic	Decomposition
Abstraction			Logic	

Lost in a Book: Making a Story
Coding (Scratch Jnr)

Abstraction	Pattern Seeking	Algorithms	Logic	Decomposition
	Pattern Seeking	Algorithms	Logic	Decomposition

Year 3

Lost in a Book: A Presentation on the Stone Age
Digital Literacy (Google search engine, Google Slides, Virtual Reality, video recording)

Abstraction	Pattern Seeking	Algorithms	Logic	Decomposition
Abstraction	Pattern Seeking			

Change the World: Creating a Climate Change Game
Coding (Scratch Jnr)

Abstraction	Pattern Seeking	Algorithms	Logic	Decomposition
	Pattern Seeking	Algorithms	Logic	Decomposition

Year 4

Lost in a Book: Adventure Stories
Digital Literacy and Coding (Animation in Google Slides)

Abstraction	Pattern Seeking	Algorithms	Logic	Decomposition

Change the World: The Water Issue
Digital Literacy (Selecting appropriate tools)

Abstraction	Pattern Seeking	Algorithms	Logic	Decomposition

Year 5

The Famous Five: AstroPi Flight
Coding (Raspberry Pi)

Abstraction	Pattern Seeking	Algorithms	Logic	Decomposition

Change the World: Creating a survey on FairTrade
Digital Literacy (Google Forms)

Abstraction	Pattern Seeking	Algorithms	Logic	Decomposition

Year 6

The Famous Five: Collaborative Story Writing
Digital Literacy (Google Drive: share functions, folders, shared drives, assigning a task through comments)

Abstraction	Pattern Seeking	Algorithms	Logic	Decomposition

Listen: Make a Band!
Coding (Raspberry Pi – Rockband) Digital Literacy (Select the appropriate tool/ technology to record a song)

Abstraction	Pattern Seeking	Algorithms	Logic	Decomposition

Abstraction

Identifying what is important and then removing unnecessary detail.

Block	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
The Famous Five	The Journey of James Cook (Coding)				AstroPi Flight (Coding	Collaborative Story Writing (Digital Literacy)
Designed and Built		All about London (Digital Literacy)				
Lost in a Book	Tokyo (Digital Literacy)	Making a Story (Coding)	Presentation (Digital Literacy)	Adventure Stories (Digital Literacy)		
Listen						Make a Band! (Digital Literacy, coding)
Change the World			Climate Change Game (Coding)	The Water Issue (Digital Literacy)	FairTrade Surveys (Digital Literacy)	

Pattern Seeking

Spotting and using similarities to make predictions, create rules and solve other problems.

Block	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
The Famous Five	The Journey of James Cook (Coding)				AstroPi Flight (Coding	Collaborative Story Writing (Digital Literacy)
Designed and Built		All about London (Digital Literacy)				
Lost in a Book	Tokyo (Digital Literacy)	Making a Story (Coding)	Presentation (Digital Literacy)	Adventure Stories (Digital Literacy)		
Listen						Make a Band! (Digital Literacy, coding)
Change the World			Climate Change Game (Coding)	The Water Issue (Digital Literacy)	FairTrade Surveys (Digital Literacy)	

Algorithms

Making steps and rules.

Block	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
The Famous Five	The Journey of James Cook (Coding)				Astropi Flight (Coding)	Collaborative Story Writing (Digital Literacy)
Designed and Built		All about London (Digital Literacy)				
Lost in a Book	Tokyo (Digital Literacy)	Making a Story (Coding)	Presentation (Digital Literacy)	Adventure Stories (Digital Literacy)		
Listen						Make a Band! (Digital Literacy, coding)
Change the World			Climate Change Game (Coding)	The Water Issue (Digital Literacy)	FairTrade Surveys (Digital Literacy)	

Logic

Establishing and checking facts, and making predictions.

Block	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
The Famous Five	The Journey of James Cook (Coding)				AstroPi Flight (Coding	Collaborative Story Writing (Digital Literacy)
Designed and Built		All about London (Digital Literacy)				
Lost in a Book	Tokyo (Digital Literacy)	Making a Story (Coding)	Presentation (Digital Literacy)	Adventure Stories (Digital Literacy)		
Listen						Make a Band! (Digital Literacy, coding)
Change the World			Climate Change Game (Coding)	The Water Issue (Digital Literacy)	FairTrade Surveys (Digital Literacy)	

Decomposition

Breaking a problem or system down into its parts.

Block	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
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Designed and Built		All about London (Digital Literacy)				
Lost in a Book	Tokyo (Digital Literacy)	Making a Story (Coding)	Presentation (Digital Literacy)	Adventure Stories (Digital Literacy)		
Listen						Make a Band! (Digital Literacy, coding)
Change the World			Climate Change Game (Coding)	The Water Issue (Digital Literacy)	FairTrade Surveys (Digital Literacy)	

E-Safety

The safe and responsible use of technology.

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Follow the Elements promise online Demonstrate what to do/ where to report concerns. Talk about good & bad choices in real life e.g. taking turns, saying kind things, helping others, telling an adult if something upsets you. Play appropriate games on the Internet. Talk about good and bad choices when using websites – being kind, telling a grown up if something upsets us & keeping ourselves safe by keeping information private.	Follow the Elements promise online. Demonstrate what to do/ where to report concerns. Keep information (such as usernames and passwords) private. Explore how email can be used to communicate with real people within their schools, families & communities.	Know the implications of inappropriate online searches. Use email safely and know ways of reporting inappropriate behaviours and content to a trusted adult. Chooses websites that are good for them to visit & not inappropriate sites. Explore what cyberbullying means & what to do when they encounter it. Creates a digital footprint or "trail" and manages it so it's not hurtful.	Navigates all applications on G Suite safely and securely. Shows respect for others when online. Identifies and reports content that is unsafe or hurtful. They can help others to understand the importance of online safety and can demonstrate how to be safe online. Agree sensible e-safety rules for the classroom. Choose a secure password for age-appropriate websites. Discuss what actions could be taken if they are uncomfortable or upset online e.g. Report Abuse button. Talk about what games they enjoying playing and what good choices are when playing games e.g. content, screen time. Use a class blog to share information and talk about who can see it, and how to communicate safely and respectfully Comment and provide positive feedback on the work of classmates in school or online, or the work of others online.		Children have a secure knowledge of common online safety rules and can apply this by demonstrating the safe and respectful use of a few different technologies and online services. Agree sensible e-safety rules for the classroom. Discuss their own personal use of the Internet and choices they make Discuss how to protect devices from virus threats. Discuss the importance of keeping an adult informed about what you're doing online, and how to report concerns. Explore using the safe and responsible use of online communication tools e.g. blogs, messaging. Children implicitly relate appropriate online behaviour to their right to personal privacy and mental wellbeing of themselves and others.	

Digital Literacy

Using technology to find, evaluate, create and share information.

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Children can turn on a chromebook and use the keyboard to type. Children understand what is meant by technology and can identify a variety of examples both in and out of school. Children begin to think about the different technology they could use to record their work/ ideas.	Children are able to sort, collate, and store simple digital content e.g. children can name, save and retrieve their work. Children begin to edit their digital content to improve the appearance and delivery of content e.g. spellcheck, changing font, size, colour etc. They can make a distinction between objects that use modern technology and those that do not e.g. a microwave vs. a chair.	Children can input data into a sheet and present the results using a graph/ chart. Children are able to organise content e.g. creating folders and sorting their work into folders, colour coding folders. Children are able to collaboratively create content and edit/ review each other's works objectively.	Children are able to present information in different ways (videos, screen sharing, docs, slides etc.) and understand the benefits and drawbacks of using each one. They are also able to collect, analyse, evaluate and present data in an easy to read format using tools, graphs, charts (sheets). Children are able to search safely for images and information on the internet and are aware that they are doing this through a search engine.	Children can evaluate the reliability of information found on the internet and use this to assess whether they should use the information. Children can collect and analyse data e.g. Google forms and Google sheets. Children can choose how to present information effectively, using a range of tools.	Children can review data and present it in an appropriate way and are able to provide reasons for why they chose that method. Children are able to search efficiently and safely, checking the reliability of sources and understanding the order of results.	Children are able to share, edit and review work with peers to improve their content. Children can independently select an app/ device for a purpose and explain why that app/ device is best suited for the purpose. Children are able to explain how credible a source is and compare different sources of information. Children make clear links and can explain how their content is created for a specific audience.

Coding

Telling a computer what to do by giving it a set of instructions.

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Children can sequence a set of pictures or sentences to make a story. Children can follow a set of verbal instructions to achieve a specific outcome. They will also be able to give peers a set of verbal instructions to achieve a specific outcome e.g. move around obstacles.	Children understand that an algorithm is a set of instructions used to solve a problem or achieve an objective. They know that an algorithm written for a computer is called a program. Children can write a simple algorithm and work out what is wrong in a simple algorithm. Children can read a simple algorithm and predict the effect of the program (what will happen at the end of the program).	Children can create a program that achieves a specified purpose. They can also identify and correct errors within a program that prevent it from achieving the desired outcome (debugging). Children understand they need to be clear and concise when writing their algorithms to ensure they achieve the desired outcome. Children can look at and follow algorithms based on real life situations .	Children can create a program that achieves a specific goal by breaking it down into smaller parts. Children can turn a simple real-life situation into an algorithm for a program by deconstructing it into manageable parts. Their design shows that they are thinking of the desired task and how this translates into code.	Children can use 'if' statements in their programs to create desired effects. Children can also use timers within their programs and understand the effect this has. Children can identify an error within their program that prevents it following the desired algorithm and then fix it.	Children can create a program that controls a physical system e.g. Raspberry Pi. Children are beginning to create more complex programs and are able to test and debug their programs as they go along. Children are beginning to think about the structure of their code and start to use repetition, sequence and selection. Children can translate algorithms into code understanding how to use different variables (timers, 'if statements, repetition) to achieve specific outcomes.	Children can create more complex programs. Children are able to test and debug programs as they go and approach it logically to find the bug. Children are confident using different variables, outputs and inputs within their code and can explain their effect on the outcome. Children can understand parts of a complex algorithm and will attempt to logically assemble the separate parts of a complex algorithm.

Coverage of Computing Skills

Year 1

The Famous Five: The Journey of James Cook
Coding (Bee Bots)

Creating	Tinkering	Debugging	Evaluating	Communication

Lost in a Book: Tokyo
Digital Literacy (Google search engine, Google Docs)

Creating	Tinkering	Debugging	Evaluating	Communication

Year 2

Designed and Built: All about London
Digital Literacy (Google search engine, Google Docs, Google Slides)

Creating	Tinkering	Debugging	Evaluating	Communication

Lost in a Book: Making a Story
Coding (Scratch Jnr)

Creating	Tinkering	Debugging	Evaluating	Communication

Year 3

Lost in a Book: A Presentation on the Stone Age
Digital Literacy (Google search engine, Google Slides, Virtual Reality, video recording)

Creating	Tinkering	Debugging	Evaluating	Communication

Listen: Composing on GarageBand
Coding and Digital Literacy (GarageBand software)

Creating	Tinkering	Debugging	Evaluating	Communication

Change the World: Creating a Climate Change Game
Coding (Scratch Jnr)

Creating	Tinkering	Debugging	Evaluating	Communication

Year 4

Lost in a Book: Adventure Stories
Digital Literacy and Coding (Animation in Google Slides)

Creating	Tinkering	Debugging	Evaluating	Communication

Change the World: The Water Issue
Digital Literacy (Selecting appropriate tools)

Creating	Tinkering	Debugging	Evaluating	Communication

Year 5

The Famous Five: AstroPi Flight
Coding (Raspberry Pi)

Creating	Tinkering	Debugging	Evaluating	Communication

Change the World: Creating a survey on FairTrade
Digital Literacy (Google Forms)

Creating	Tinkering	Debugging	Evaluating	Communication

Year 6

The Famous Five: Collaborative Story Writing
Digital Literacy (Google Drive: share functions, folders, shared drives, assigning a task through comments)

Creating	Tinkering	Debugging	Evaluating	Communication

Listen: Make a Band!
Coding (Raspberry Pi – Rockband) Digital Literacy (Select the appropriate tool/ technology to record a song)

Creating	Tinkering	Debugging	Evaluating	Communication