Lightcliffe CofE Primary School

Computing Curriculum Intent and Overview

In partnership to **Educate, Nurture & Empower**

A member of ABBEY MULTI ACADEMY TRUST

Computing Curriculum: Lightcliffe CE Primary School.

At Lightcliffe, we aim to prepare our pupils for the 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 computing is of increasing importance for children's future both at home and for employment. We are intent on providing opportunities to build and progress our children's skills in digital literacy, computer science and online safety so that they can use information technology to flourish in our ever-connected world. Our computing curriculum focuses on a progression of skills in digital literacy, computer science and information technology to ensure that children become competent in safely using, as well as understanding, technology. These strands are taught discretely through a range of units 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. The Lightcliffe computing curriculum intends on helping our children access content from a wide range of people, communities and cultures safely and maturely.

Key Curriculum Principles

1. **The Bigger Picture: Progression should be clear**
   The skills that children will learn through each computing unit is clear and develops a range of skills in understanding what a computer is and its basic functions, presenting information and multimedia, data, programming and algorithms and digital literacy.

2. **Enrichment:** It is also important to recognise that computing learning takes place across the curriculum and within a range of activities. We know that computing learning will be strengthened through regular opportunities to use and apply learning in different contexts, such as:
   • Within other subject lessons as a tool to research and gather relevant information about the aspect being studied.

   • As a tool to communicate and collaborate

3. **Deliberate Practice:**
   Becoming adept at using digital devices means nurturing a range of positive behaviours. Pupils will be encouraged to:

   • Work collaboratively as a class and in small groups

   • Use and apply their learning across the curriculum

   • Share their knowledge and understanding with others

4. **Oracy:** Through our work with Voice 21 and participation in the 'Narrowing the Word Gap' project, pupils regularly experience different types of talk, such as exploratory talk and presentational talk. Strategies for talk in order to 'learn to talk' and 'learn through' talk are spread throughout the computing curriculum, so that learners can further develop ideas; and articulate them to their peers.

National Curriculum: Purpose of Study for Computing

Purpose of study

A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

Aims

The national curriculum for computing aims to ensure that all pupils:

- can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation
- can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems
- can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems
- are responsible, competent, confident and creative users of information and communication technology.

Attainment targets

Subject content

Key stage 1

Pupils should be taught to:

- 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
- use technology purposefully to create, organise, store, manipulate and retrieve digital content
- 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

Key stage 2

Pupils should be taught to:

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

Year 1

Unit	Substantive Knowledge	Disciplinary Knowledge	Key Vocabulary
Autumn – Technology in the Classroom & Unplugged Computing	• Recognise different types of technology used in school and at home. • Understand that instructions can be followed to complete tasks. • Know that technology helps us perform everyday tasks.	• Identify and name classroom technology devices. • Follow and give simple instructions to complete a task. • Sequence steps logically to solve a problem.	Technology, Device, Instruction, Sequence, iPad
Spring – Technology Outside School, Online Safety, Lego Builders	• Identify examples of technology in the wider world. • Understand basic rules for staying safe online. • Know that digital tools can be used to build and create.	• Recognise safe and unsafe online behaviour. • Follow instructions to build digital models. • Understand and apply sequencing in digital tasks.	Online, Safety, Technology, Builder, Sequence
Summer – Maze Explorers, Animated Story Books, Coding	• Know that digital tools can be used to navigate and tell stories. • Understand that coding involves giving instructions to a computer. • Recognise how animations are created using digital tools.	• Navigate a digital maze using directional commands. • Create and animate a digital story using software. • Use basic coding blocks to create simple programs and debug errors.	Maze, Animation, Story, Code, Command, Debug

Year 2

Unit	Substantive Knowledge	Disciplinary Knowledge	Key Vocabulary
Autumn – Creating Pictures, Making Music, Coding	- Understand that digital tools can be used for artistic and musical expression. - Know basic coding concepts such as sequencing and animation. - Recognise different digital tools for creative tasks.	- Use digital brushes and effects to create artwork. - Compose music using software tools. - Sequence coding blocks to create animations and interactive content.	Paint, Brush, Music, Compose, Code, Sequence
Spring – Spreadsheets, Online Safety, Word Processing	- Know how to enter and organise data in spreadsheets. - Understand basic online safety principles. - Recognise how to create and format digital text documents.	- Enter data into spreadsheet cells and apply basic formulas. - Identify online risks and apply safety rules. - Format text, use keyboard shortcuts, and edit documents.	Spreadsheet, Cell, Formula, Online Safety, Word, Text
Summer – Databases (Questioning)	- Understand that databases store structured information. - Know how to search, sort, and retrieve data from a database.	- Ask and answer questions using a database. - Sort and filter data to find relevant information. - Create simple data sets and interpret results.	Database, Question, Sort, Filter, Record, Field

Year 3

Unit	Substantive Knowledge	Disciplinary Knowledge	Key Vocabulary
Autumn – Touch Typing, Simulations, Email	- Know how to type efficiently using correct finger placement. - Understand how simulations represent real-world scenarios. - Know how to use email safely and effectively.	- Improve typing speed and accuracy through practice. - Explore and evaluate digital simulations. - Compose, send, and reply to emails with attachments.	Typing, Simulation, Email, Keyboard, Attachment
Spring – Online Safety, Branching Databases, Coding	- Understand how to stay safe online and protect personal information. - Know how to classify information using branching databases. - Understand selection and repetition in coding.	- Recognise online risks and apply safety strategies. - Create branching databases to sort and classify data. - Use selection and repetition in coding projects.	Online Safety, Database, Branching, Selection, Repetition
Summer – Spreadsheets, Graphing	- Know how to use spreadsheets to organise and analyse data. - Understand how to present data visually using graphs.	- Enter and format data in spreadsheets. - Use formulas and create charts and graphs. - Interpret data trends and patterns.	Spreadsheet, Chart, Graph, Data, Formula, Analyse

Year 4

Unit	Substantive Knowledge	Disciplinary Knowledge	Key Vocabulary
Autumn – Online Safety, Coding	- Know how to protect personal information online. - Understand how to use variables and loops in coding.	- Identify secure websites and manage online identity. - Use variables and loops to create interactive programs. - Debug and refine code for accuracy.	Personal Info, Secure, Variable, Loop, Debug
Spring – Writing for Different Audiences, Logo	- Know how to adapt writing for different digital formats and audiences. - Understand how to use Logo programming language for drawing.	- Create digital content tailored to specific audiences. - Use Logo commands to draw geometric shapes. - Plan and test procedures using Logo.	Audience, Format, Logo, Command, Procedure
Summer – Animation, Effective Searching	- Know how to create animations using digital tools. - Understand how to search the internet effectively and safely.	- Create frame-by-frame animations with transitions. - Use search engines with keywords and evaluate results. - Apply safe searching practices.	Animation, Frame, Search, Keyword, Evaluate

Year 5

Unit	Substantive Knowledge	Disciplinary Knowledge	Key Vocabulary
Autumn – Online Safety, Coding	- Know how to manage online relationships and digital reputation. - Understand how to use functions and nested loops in coding.	- Recognise and report online concerns. - Use functions and nested loops in programming tasks. - Test and debug programs for functionality.	Reputation, Function, Loop, Debug, Online
Spring – Databases, Game Creator	- Know how to use databases to store and retrieve structured data. - Understand how to design and build interactive games.	- Create and query databases using software tools. - Design game levels, characters, and logic. - Use feedback to improve game design.	Database, Query, Game, Design, Logic, Feedback
Summer – 3D Modelling, Concept Maps	- Know how to create and manipulate 3D digital models. - Understand how to organise ideas visually using concept maps.	- Use 3D modelling tools to build and edit shapes. - Create and link ideas in concept maps. - Visualise and present structured information.	3D Model, Shape, Concept Map, Link, Visualise

Year 6

Unit	Substantive Knowledge	Disciplinary Knowledge	Key Vocabulary
Autumn – Online Safety, Coding	- Know how to protect digital identity and manage online presence. - Understand how to use complex programming structures.	- Manage online identity and apply safety strategies. - Use variables, functions, and conditionals in code. - Debug multi-step programs for accuracy.	Identity, Conditionals, Function, Variable, Debug
Spring – Spreadsheets, Blogging	- Know how to use spreadsheets for budgeting and data analysis. - Understand how to create and manage a blog.	- Use advanced spreadsheet functions and formatting. - Write and publish blog posts with multimedia. - Moderate comments and manage blog settings.	Spreadsheet, Budget, Blog, Post, Analyse
Summer – Networks, Quizzing	- Know how computer networks and the internet function. - Understand how to create interactive quizzes with feedback.	- Identify components of a network and explain data flow. - Design and build quizzes with scoring and feedback. - Evaluate quiz effectiveness and user experience.	Network, Internet, Data, Quiz, Feedback, Score