ST ANNE'S RC PRIMARY SCHOOL

Whole School Computing Policy & Progression Ladder

Introduction

This policy sets out our school's vision, aims, principles and strategies for the delivery of Computing and the use of technology to support the curriculum. Alongside the school's Strategic Development Plan for Technology, it will form the basis for the development of the Computing curriculum in the school over the next 3 years.

The policy was written in 2024. Sections of the text have been drawn together from a variety of sources including the National Curriculum for Computing (England), the Computing at Schools Guide for Primary Teachers, https://teachcomputing.org/curriculum, https://computingqualityframework.org/ and https://www.computingatschool.org.uk/.

What is 'Computing?

The National Curriculum Purpose of Study states that:

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.

Whilst the Computing Curriculum has an increased focus on Computer Science including developing pupils' programming skills and their understanding of what happens 'behind the scenes', it is important that they also continue to develop their Digital Literacy and e-safety capability and our school curriculum is designed to reflect this.

Intent

We strive to achieve this aim by:

As a school, we embrace the national vision for Computing and appreciate that, to achieve this, pupils must have access to a curriculum which is 'balanced and broadly based'. Our aim is to produce learners who are confident, discerning and effective users of technology and who also have a good understanding of computers and how computer systems work, and how they are designed and programmed.

- supporting all children in using technology with purpose and enjoyment
- Meeting, and building on the minimum requirement set out in the National Curriculum as fully as possible and helping all children to achieve the highest possible standards of achievement
- Helping all children to develop the underlying skills and capability which is essential to developing Computing capability (such as problem solving, perseverance, learning from mistakes) and apply them elsewhere
- helping all children to develop the necessary skills to exploit the potential of technology and to become autonomous and discerning users

- helping all children to evaluate the benefits and risks of technology, its impact on society and how to manage their use of it safely and respectfully.
- using technology to develop partnerships beyond the school
- celebrating success in the use of technology.

At St Anne's RC Primary School, teachers are encouraged to progressively develop pupils' computing skills and capability through discrete learning opportunities, and also to exploit this capability as a tool to support objectives in other curriculum areas meaningfully. These links include, but are not limited to, the use of a range digital devices in a wide range of contexts. Both plugged and unplugged learning opportunities are planned to support pupils' understanding of the underlying concepts in Computing. These opportunities may well be presented within other subject areas (e.g. sequencing instructions in English, problems solving in Maths or isolating variables in Science).

In this way Computing and the use of technology become integrated into the curriculum and are used as a truly beneficial tool for learning with the intent of achieving:

Curriculum Design and Implementation

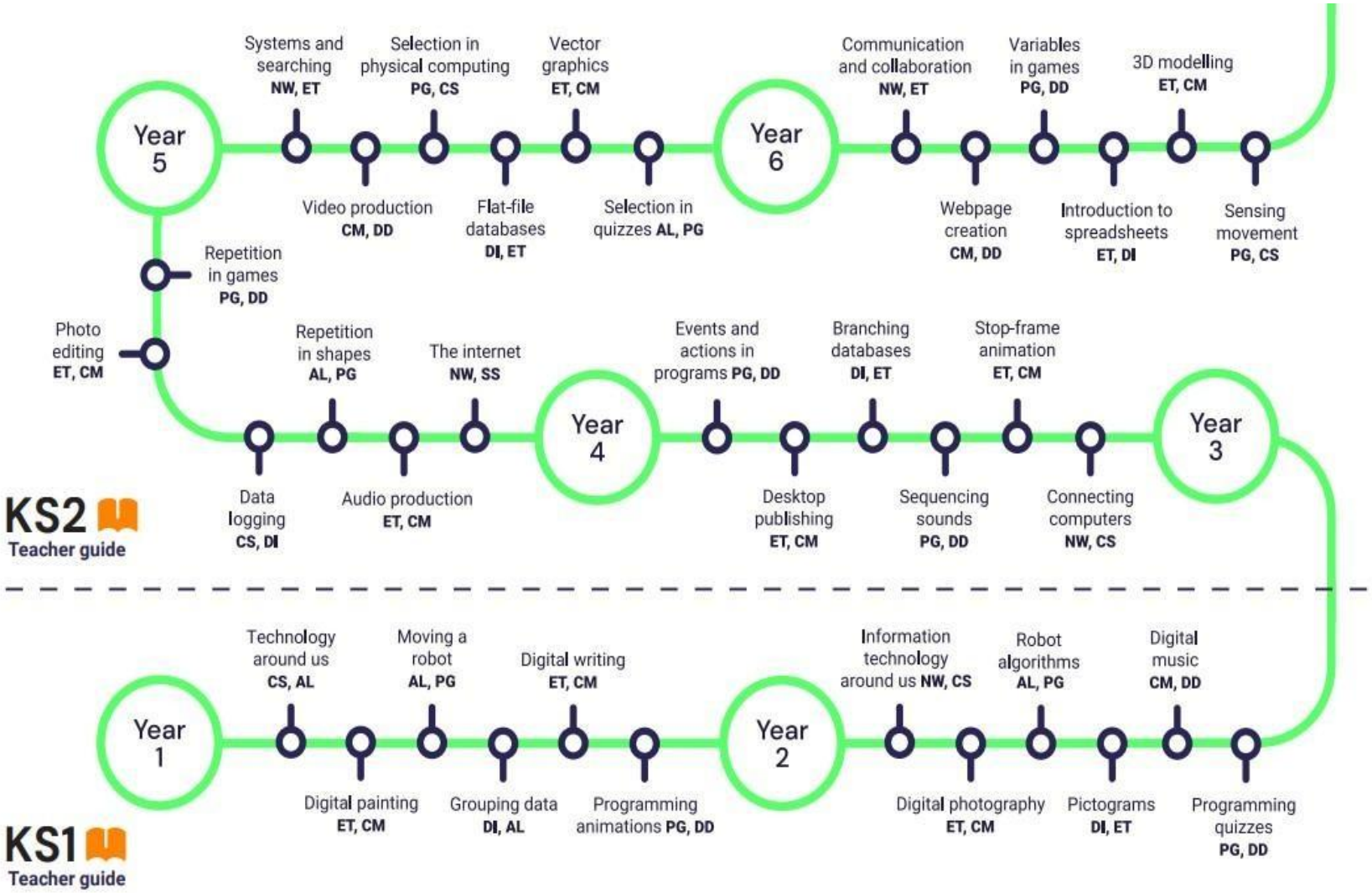
Curriculum Structure

Computing is taught through Teach Computing and organised through the following strands:

- Computing Systems and Networks
- Creating Media
- Data and Information
- Programming
- Online Safety (embedded)

Each unit identifies:

- Key knowledge (substantive knowledge)
- Key vocabulary
- Misconceptions to address
- Computational thinking


Year 5
Systems and searching NW, ET
Selection in physical computing PG, CS
Vector graphics ET, CM
Video production CM, DD
Flat-file databases DI, ET
Selection in quizzes AL, PG
Year 6
Communication and collaboration NW, ET
Variables in games PG, DD
3D modelling ET, CM
Webpage creation CM, DD
Introduction to spreadsheets ET, DI
Sensing movement PG, CS
Repetition in games PG, DD
Photo editing ET, CM
Repetition in shapes AL, PG
The internet NW, SS
Year 4
Events and actions in programs PG, DD
Branching databases DI, ET
Stop-frame animation ET, CM
Year 3
Data logging CS, DI
Audio production ET, CM
Desktop publishing ET, CM
Sequencing sounds PG, DD
Connecting computers NW, CS
KS2 Teacher guide
Year 1
Technology around us CS, AL
Moving a robot AL, PG
Digital writing ET, CM
Digital painting ET, CM
Grouping data DI, AL
Programming animations PG, DD
Year 2
Information technology around us NW, CS
Robot algorithms AL, PG
Digital music CM, DD
Digital photography ET, CM
Pictograms DI, ET
Programming quizzes PG, DD
KS1 Teacher guide

Substantive and Disciplinary Knowledge

At St Anne's RC Primary School, we recognise the distinction between substantive knowledge (the content that pupils learn) and disciplinary knowledge (how pupils apply, use and think within the subject). Both are carefully sequenced and revisited throughout the curriculum to ensure knowledge is retained and built upon over time.

Substantive Knowledge

Substantive knowledge is the established content, facts, concepts and information that pupils learn in Computing. This knowledge is organised through three key strands:

Computer Science

Pupils develop an understanding of the principles of information and computation and how digital systems operate. They learn:

- What algorithms are and how they are used
- How programs are created and debugged
- How computer networks function
- How digital devices process information
- How programming structures such as sequence, repetition and selection operate
- How variables and inputs can be used in programming

Information Technology

Pupils learn how technology can be used purposefully to create, organise and communicate information. They develop knowledge of:

- Digital devices and software applications
- Creating and editing digital content
- Collecting, organising and presenting data
- Selecting appropriate technology for different purposes
- Communicating and collaborating using technology

Digital Literacy

Pupils learn how to use technology safely, responsibly and respectfully. They develop understanding of:

- Online safety and digital wellbeing
- Responsible online behaviour
- Privacy and personal information
- Evaluating online content critically
- Understanding the impact of technology on individuals and society

Substantive knowledge is explicitly taught and revisited regularly through retrieval activities and purposeful opportunities to apply previous learning.

Disciplinary Knowledge

Disciplinary knowledge refers to how pupils work as computer scientists and digital creators. It includes the thinking processes, behaviours and approaches used to solve problems and apply knowledge effectively.

Pupils progressively develop:

Computational Thinking

Pupils learn to:

- Break complex problems into smaller steps (decomposition)
- Identify patterns and relationships
- Use logical reasoning
- Design and follow algorithms
- Apply abstraction to simplify problems

Programming and Problem Solving

Pupils learn to:

- Create, test and refine programs
- Predict outcomes before running programs
- Identify and debug errors
- Modify and improve existing programs
- Evaluate solutions and suggest improvements

Creating and Evaluating

Pupils learn to:

- Select appropriate tools for a purpose
- Design and create digital products
- Evaluate the effectiveness of digital content
- Reflect on strengths and areas for development

Communication and Collaboration

Pupils learn to:

- Share ideas using digital tools
- Work collaboratively on digital projects
- Present information effectively
- Communicate safely and responsibly online

Disciplinary knowledge is developed progressively through both plugged and unplugged activities and through opportunities to apply learning across the wider curriculum.

Both substantive and disciplinary knowledge are explicitly planned, taught and revisited so that pupils develop secure understanding and become confident, capable and responsible users and creators of technology.

Teaching and Learning Principles

Teaching at St Anne's follows key principles:

a) Small Steps and Sequencing

Learning is broken into manageable steps, ensuring pupils fully understand each concept before moving on.

b) Retrieval Practice

Regular opportunities are provided to recall prior knowledge through:

- Low-stakes quizzes
- Flashback with Friends at the start of each lesson
- AFL Questioning

c) Explicit Instruction

Teachers:

- Model scientific thinking
- Use clear explanations
- Introduce vocabulary explicitly

d) Practical Enquiry

Every unit includes opportunities for pupils to:

- Investigate
- Explore

- Apply knowledge practically

e) Questioning

Teachers use:

- Open-ended questions
- Probing questions
- Challenge questions for greater depth

Use of Scientific Vocabulary

Vocabulary is explicitly taught and revisited. Strategies include:

- Vocabulary displays
- Word banks
- Pre-teaching for SEND/EAL pupils
- Expectation of accurate use in speaking and writing

Cross-Curricular Links

Science is linked where appropriate to:

- **Mathematics** (measuring, data handling, graphs)
- **English** (reading, writing explanations, speaking and listening)
- **Geography** (environment, Earth science)
- **Design and Technology** (materials, forces)

Progression of Key Skills

Skill	Key Stage One	Lower Key Stage Two	Upper Key Stage Two
Programming	Simple sequences	Repetition and debugging	Variable and complex programs
Data	Collect data	Record and interpret data	Analyse and evaluate data
Digital Literacy	Safe use	Responsible use	Critical evaluation
Communication	Share work	Collaborate	Present effectively

Vocabulary Progression:

Year Group	Teach Computing Themes	Core Vocabulary
EYFS	Technology in everyday life	technology, computer, device, screen, keyboard, mouse, photograph, camera, instructions
Year One	Technology Around Us, Digital Painting, Moving a Robot	algorithm, program, instructions, sequence, debug, robot, command, digital, input
Year Two	Digital Photography, Pictograms, Robot Algorithms	data, information, pictogram, photograph, orientation, algorithm, debugging, prediction
Year Three	Connecting Computers, Sequencing Sounds	network, internet, connection, audio, repetition, sequence, event, sprite
Year Four	Audio Production, Data Logging	data logger, sensor, variable, branching database, media, input, output
Year Five	Video Production, Flat File Databases	database, search, field, record, selection, vector, animation, copyright
Year Six	Webpages, Variables, Sensing	variable, procedure, selection, condition, HTML, webpage, network, sensor, debugging

Key Vocabulary Progression by Strand

Programming

- KS1: instruction → algorithm → sequence → debug
- LKS2: repetition → event → loop → variable
- UKS2: selection → condition → procedure → input/output

Data and Information

- KS1: data → pictogram → label
- LKS2: branching database → data logger
- UKS2: database → field → record → search

Systems and Networks

- KS1: technology → computer → device
- LKS2: network → internet → connection
- UKS2: router → server → wireless access point

Creating Media

- KS1: paint → image → sound
- LKS2: audio → media → editing
- UKS2: vector → animation → webpage

Online Safety

- KS1: safe → personal information
- LKS2: password → privacy → communication
- UKS2: digital footprint → reliability → identity

Assessment

At St Anne's RC Primary School, assessment in Computing is used to ensure that pupils develop secure knowledge, understanding and skills over time. Assessment is an ongoing process that informs teaching, supports progression and enables teachers to identify misconceptions and adapt learning accordingly.

Assessment is aligned with the Teach Computing curriculum and is used to monitor both substantive knowledge (what pupils know) and disciplinary knowledge (how pupils apply computational thinking and computing skills).

Formative Assessment

Formative assessment is embedded throughout teaching and learning and provides teachers with regular opportunities to assess pupils' understanding and progress. Strategies include:

- Retrieval activities to revisit prior learning
- Low-stakes quizzes and knowledge checks
- Questioning and class discussion
- Observation of pupils during practical activities
- Teacher feedback during lessons
- Pupil self-assessment and peer assessment
- Review of digital outcomes and completed tasks
- Discussion of computational thinking and problem-solving processes

Teachers use assessment information continuously to identify misconceptions and adapt future teaching where necessary.

Summative Assessment

Summative assessment is used to measure pupils' attainment and progress against curriculum expectations and Teach Computing learning outcomes.

This may include:

- End-of-unit assessment tasks
- Evaluation of completed digital projects
- Assessment of programming outcomes
- Teacher judgement using Teach Computing progression statements
- Assessment against National Curriculum objectives

Assessment evidence may be gathered through digital work, screenshots, observation records, discussion and pupil outcomes.

Retrieval Practice

Retrieval practice forms an important part of Computing assessment and is used to strengthen long-term memory and support retention of knowledge.

Opportunities include:

- Retrieval questions at the beginning of lessons
- Revisiting key vocabulary
- Recall of prior learning from previous units and year groups
- Application of previously taught skills in new contexts

Use of Assessment

Assessment information is used to:

• Inform future planning and curriculum development
• Identify pupils requiring additional support or challenge
• Adapt teaching to meet pupils' needs
• Monitor progress across year groups
• Support discussions with pupils and parents regarding attainment and next steps

Assessment at St Anne's is intended to support pupils in becoming confident, reflective and increasingly independent learners who can apply their computing knowledge and skills effectively across the curriculum.

- Intervention
- Adaptation of teaching

Inclusion and Adaptive Teaching

At St Anne's Primary School:

- All pupils access the same ambitious curriculum
- Tasks are adapted, not reduced
- Support includes:
    - Scaffolds
    - Visual aids such as widgits
    - Adult support

- Chunked instructions

Greater depth pupils are challenged through:

- Open-ended investigations
- Application tasks
- Leadership opportunities

Monitoring and Evaluation

The Science Leader will:

- Monitor planning and students' work
- Conduct lesson observations
- Analyse data
- Gather pupil voice
- Attend relevant training provided by Emmaus CAT and other relevant agencies
- Provide CPD for staff

Resources

Science resources include:

- White Rose Science materials
- Investigation equipment
- Outdoor learning spaces
- Digital tools

Resources are regularly reviewed and maintained.

Impact

By the end of Year 6, pupils will:

- Have secure knowledge across all science strands
- Be confident in working scientifically
- Use scientific vocabulary accurately
- Think critically and independently
- Be prepared for secondary education

Policy Created: 20th May 2026
Next Review Date: July 2027

Science Subject Lead: Erin Gordon