

Computing Curriculum

'Computers are incredibly fast, accurate and stupid; humans are incredibly slow, inaccurate and brilliant; together they are powerful beyond imagination'

Albert Einstein

The computing curriculum; Intent

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.

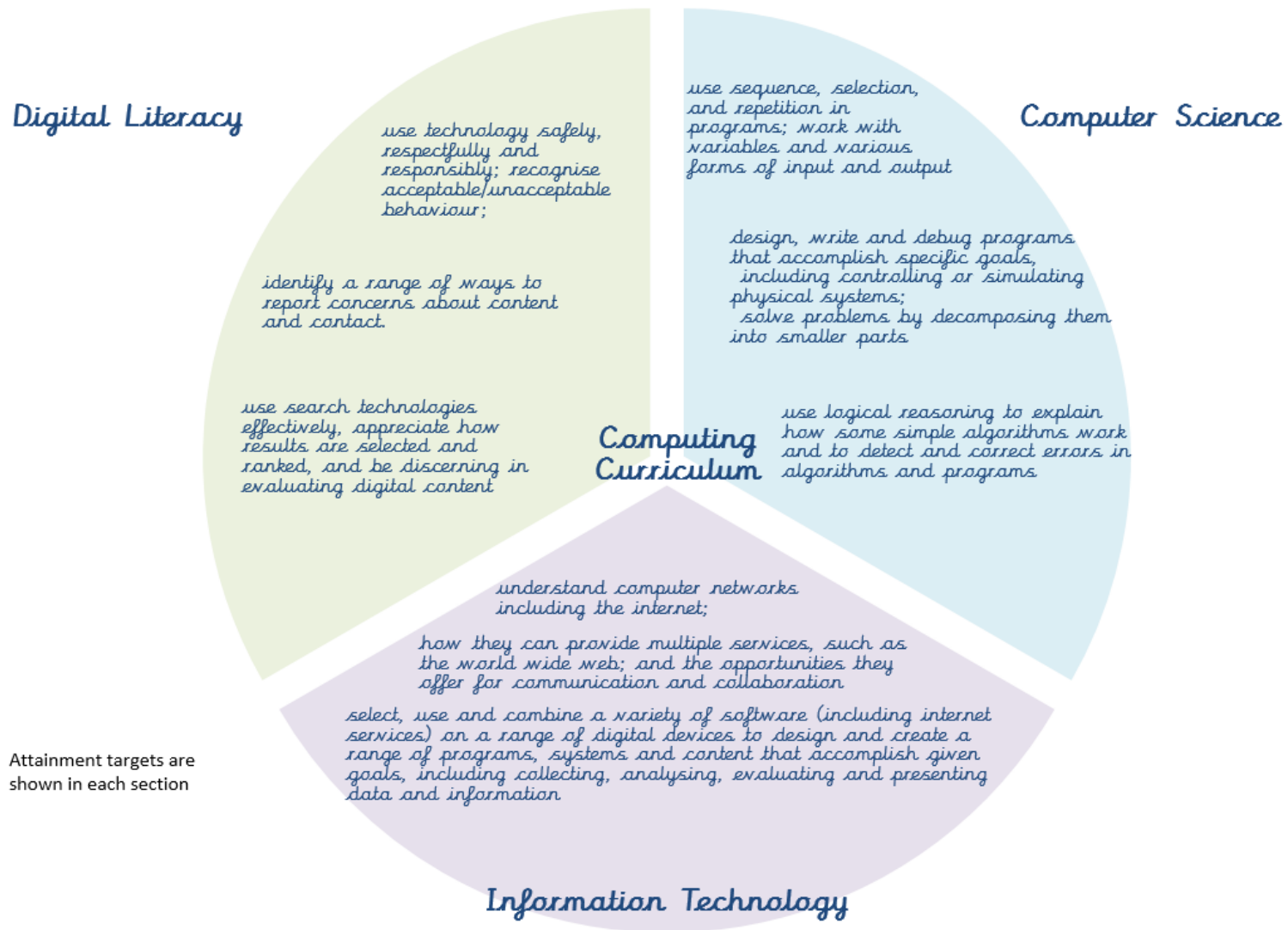
The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming.

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.

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.

Implementation



Attainment targets are shown in each section

Implementation; scheme of Work

During the Summer Term of 2021, research was carried out to find a new scheme of work, following our significant investment in the school's IT infrastructure.

The focus of our research was to find a scheme that demonstrated the progression of skills and knowledge across the key stage, provided comprehensive lesson plans that ensured cohesion and recommendation from subject specialists.

From January 2022, the whole school adopted the Teach Computing Curriculum, from the NCCE.



Teach Computing Curriculum Journey

| Key | |
|--|------------------------|
| AL | Algorithms |
| CS | Computing systems |
| CM | Creating media |
| DI | Data and information |
| DD | Design and development |
| ET | Effective use of tools |
| NW | Networks |
| PG | Programming |
| SS | Safety and security |
| IT | Impact of technology |
| Computing GCSE CS: Programming GCSE CS: Theory | |

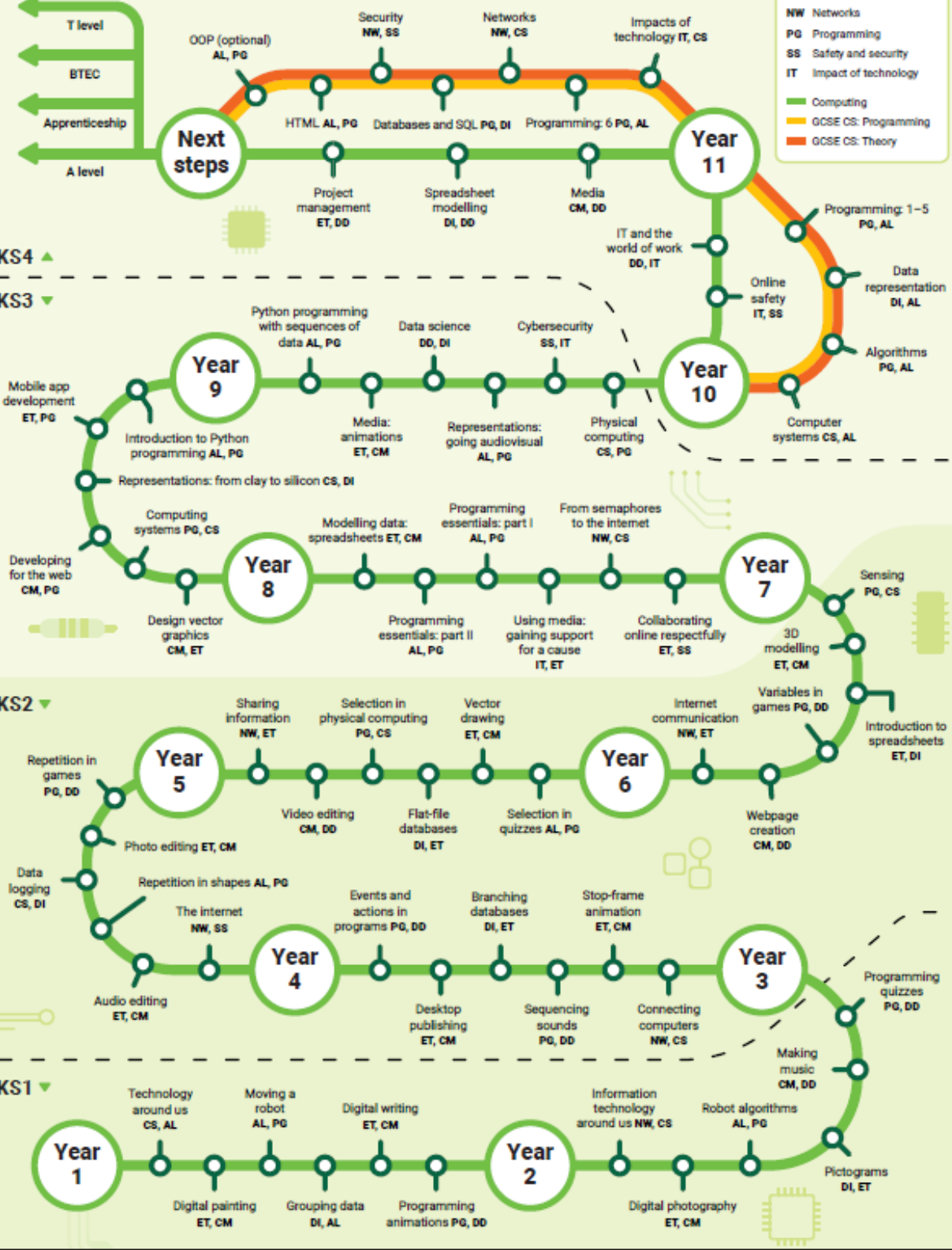


KS4 ▲

KS3 ▼

KS2 ▼

KS1 ▼



Structure of the units of work in Lower KS2

| | Computing systems and networks | Creating media | Programming A | Data and information | Creating media | Programming B |
|--------|--|--|--|---|--|--|
| Year 3 | <p>Connecting computers</p> <p>Identifying that digital devices have inputs, processes, and outputs, and how devices can be connected to make networks.</p> | <p>Stop-frame animation</p> <p>Capturing and editing digital still images to produce a stop-frame animation that tells a story.</p> | <p>Sequencing sounds</p> <p>Creating sequences in a block-based programming language to make music.</p> | <p>Branching databases</p> <p>Building and using branching databases to group objects using yes/no questions.</p> | <p>Desktop publishing</p> <p>Creating documents by modifying text, images, and page layouts for a specified purpose.</p> | <p>Events and actions in programs</p> <p>Writing algorithms and programs that use a range of events to trigger sequences of actions.</p> |
| Year 4 | <p>The internet</p> <p>Recognising the internet as a network of networks including the WWW, and why we should evaluate online content.</p> | <p>Audio editing</p> <p>Capturing and editing audio to produce a podcast, ensuring that copyright is considered.</p> | <p>Repetition in shapes</p> <p>Using a text-based programming language to explore count-controlled loops when drawing shapes.</p> | <p>Data logging</p> <p>Recognising how and why data is collected over time, before using data loggers to carry out an investigation.</p> | <p>Photo editing</p> <p>Manipulating digital images, and reflecting on the impact of changes and whether the required purpose is fulfilled.</p> | <p>Repetition in games</p> <p>Using a block-based programming language to explore count-controlled and infinite loops when creating a game.</p> |

Structure of the units of work in Upper KS2

| | Computing systems and networks | Creating media | Programming A | Data and information | Creating media | Programming B |
|--------|--|--|--|--|--|---|
| Year 5 | <p>Sharing information Identifying and exploring how information is shared between digital systems.</p> | <p>Video editing Planning, capturing, and editing video to produce a short film.</p> | <p>Selection in physical computing Exploring conditions and selection using a programmable microcontroller.</p> | <p>Flat-file databases Using a database to order data and create charts to answer questions.</p> | <p>Vector drawing Creating images in a drawing program by using layers and groups of objects.</p> | <p>Selection in quizzes Exploring selection in programming to design and code an interactive quiz.</p> |
| Year 6 | <p>Internet communication Recognising how the WWW can be used to communicate and be searched to find information.</p> | <p>Webpage creation Designing and creating webpages, giving consideration to copyright, aesthetics, and navigation.</p> | <p>Variables in games Exploring variables when designing and coding a game.</p> | <p>Introduction to spreadsheets Answering questions by using spreadsheets to organise and calculate data.</p> | <p>3D modelling Planning, developing, and evaluating 3D computer models of physical objects.</p> | <p>Sensing Designing and coding a project that captures inputs from a physical device.</p> |

Impact

We want every child to leave Nascot Wood Junior School...

- with the skills needed to ensure that they have an appropriate digital presence, keeping safe online
- with the knowledge and skills to self-regulate their own online activity
- with the knowledge and skills to manage in an increasingly digital world, enabling them to compete in the job market

We evaluate the impact of what we teach by...

- Carefully monitoring and reporting on the progress and attainment of individual children and groups of children, and ensuring that staff have access to this information to inform their planning
- Identifying gaps between disadvantaged children and other children, and ways to address gaps if they occur
- Regularly consulting with children
- Working in partnership with parents

This process of evaluation results in a continuous and relentless striving for marginal gains improvement.