

NPAT Curriculum: Computing Narrative

A quality computing curriculum equips children to use computational thinking and fosters the creativity to understand and change the world. It will support children to be competent, confident and creative users of technology and responsible digital citizens. Children will develop the knowledge and skills needed to be able to express themselves and their ideas clearly through digital media. It will enable them to see how these skills will be useful to them as active participants in both a digital world as well as in the workplace. They may be inspired to pursue further study and career paths in Programming, Engineering and Computer Science. Computing has deep links with maths, science and design technology. Children will recognise how some skills are transferable and can help them to solve problems across these subject areas.

Children will understand and apply core principles and concepts of computer science: including logic, algorithms and data representation. They will learn to analyse problems in computational terms and have repeated practical experience of writing computing programs in order to solve problems. They will evaluate and apply information technology, including new or unfamiliar technologies analytically to solve problems.

NPAT's computing curriculum is based on the Teach Computing Curriculum. Children will engage in alternate terms of full computing teaching, followed by shorter embedding terms in which computing knowledge and skills are applied to other subject areas. The Teach Computing units for Key Stages 1 and 2 are based on a spiral curriculum. This means that each of the themes is revisited regularly (at least once in each year group), and pupils revisit each theme through a new unit that consolidates and builds on prior learning within that theme. This style of curriculum design reduces the amount of knowledge lost through forgetting, as topics are revisited yearly. It also ensures that connections are made even if different teachers are teaching the units within a theme in consecutive years

During KS1, children will learn the basics of computer systems and networks including the parts of a computer as well as essential keyboard and mouse skills. They will explore how to use technology responsibly. They will be given many opportunities to create digital media including digital painting, digital writing, photography and creating music. They will learn how to group data and create simple pictograms and explore programming through physical robots, simple animation and quizzes.

During Lower KS2, children will develop their understanding of computer systems and networks by investigating routers and switches and looking at the internet as a network of networks. They will have opportunities to use digital media to create animations and desktop publishing and developing their editing skills through units looking at audio and photo. They will learn about branching databases and make links to how these are used in science. They will further develop their knowledge and understanding of programming through a series of units in Scratch, alongside applying this to other programs such as Logo. Through these units children will be able to continually practice what they have learnt in previous years and build on this learning by adding new layers. Across Lower Key Stage 2 they will develop their knowledge and understanding of sequence, events and action, and repetition.

During Upper KS2, children will develop their understanding of computer systems and networks by exploring different ways of sharing information and communicating. They will have opportunities to use digital media to create webpages, 3D modelling and developing their editing skills further by looking at video. They will learn how to populate and manipulate data within flat files databases and then explore spreadsheets and discuss why this may be a useful tool in real life. They will further develop their knowledge and understanding of programming through a series of units in Scratch, alongside applying this to through physical computing units with Crumbles, and Micro:bits. Through these units children will be able to continually practice what they have learnt in previous years and build on this learning by adding new layers. Across Upper key stage 2 they will develop their knowledge and understanding of selection, variables and sensing.

The following high dividend concepts are covered in this Computing curriculum: **Computing systems and networks, Creating media, Data and information and Programming**. These will form the 'Big Ideas' through which all science will be taught. **Predicting, problem-solving, decision-making, communicating, thinking critically and evaluating** will form common threads which will underpin computing learning throughout the curriculum.

Furthermore, **online safety** will be at the core of all learning. This will be taught explicitly through both the computing curriculum and through the PSHE/RSE curriculum, it will also be referenced and taught contextually within the computing units of work.

The curriculum has been carefully constructed to ensure children obtain a solid understanding of key computational concepts and knowledge. This is a knowledge-rich computing curriculum; knowledge is given a high status and the aim is to empower our children and carefully build their understanding of the subject. The content is specified in detail and is taught to be remembered, not just encountered.

Horizontal links will be explicitly made. E.g. Where skills are first taught then applied in different contexts (such as in Year 1, where children are taught how to move a floor robot and then apply these skills to solve problems and challenges) or where computational concepts bridge units (such as in Year 4, where repetition is encountered in the repetition in shapes unit and then explored in greater depth later in the same year in the Repetition in games unit).

Vertical links will be made where knowledge and understanding are built upon from previous computing units. E.g., In Year 6, the Webpage Creation unit will build upon knowledge and understanding from the Year 3 unit, Desktop Publishing; likewise, in Year 5, the Video Editing unit will make direct references to the Animation unit covered in Year 3 and the Audio Editing unit in Year 4.

Diagonal links will be made, particularly in our embedded units. E.g., links between computing and maths - such as Vector Drawing (Computing) with Shape and Coordinates (Maths) and Digital Writing (Computing) with Writing for Different Purposes (English).