Swale ACADEMIES TRUST

How we Plan, Teach and Assess

Computing

Planning Overview

All planning stems from the End of Year Expectations, which have been written alongside the National Curriculum. Using these as a starting point for lessons, the specialist teacher then weaves in creativity and skills to fit the year group.

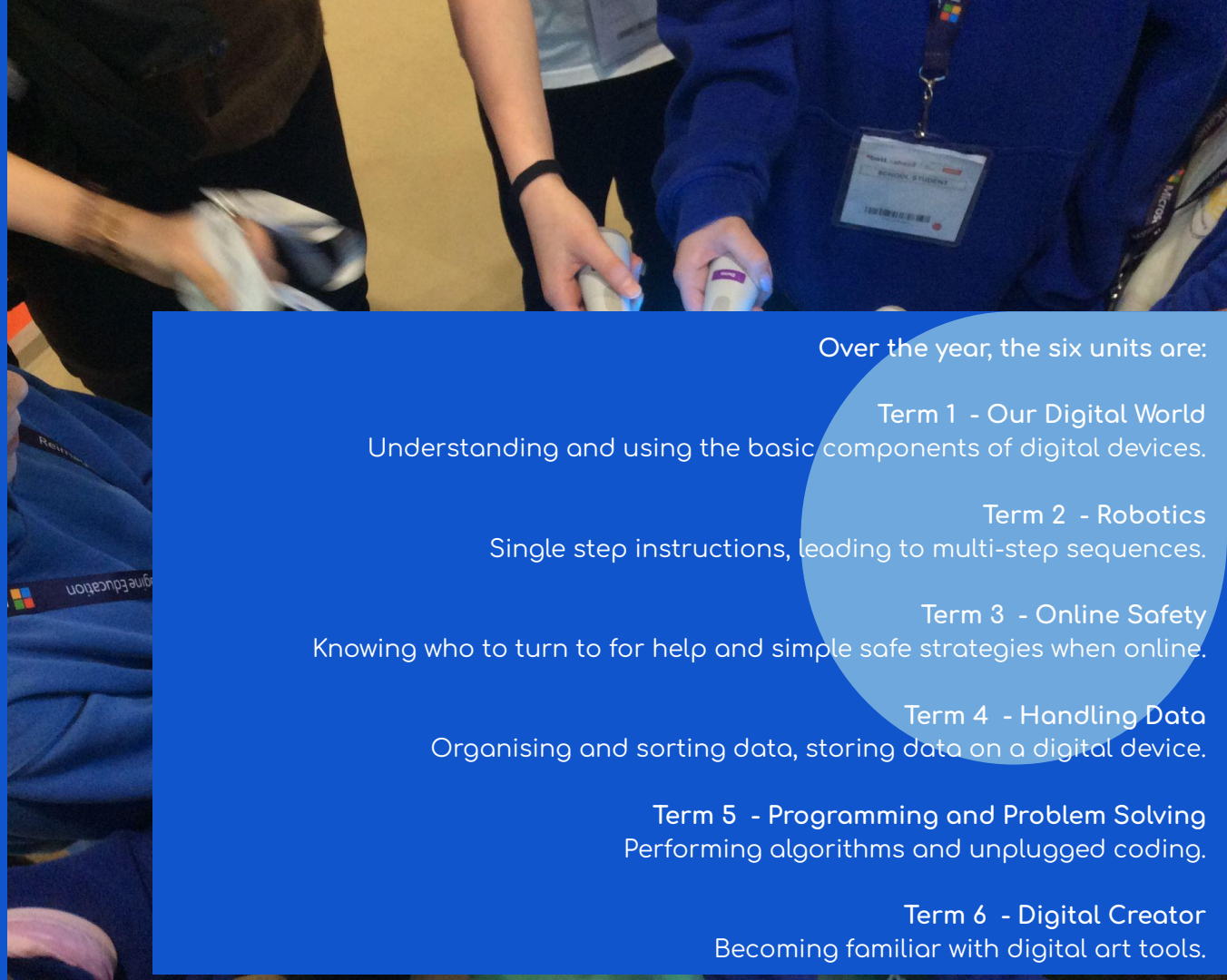
Progression is carefully structured to ensure there is a balance between skills and knowledge. Each session builds not only on the previous one but also the previous unit. A continuous development of purposeful digital literacy skills flows through all sessions, for all pupils.

The computing curriculum is ambitious and challenging. There is a strong emphasis on vocational skills and knowledge, through the use of off-screen peripherals such as one-to-one robots, 3D printing, film and photography equipment. This is all carefully organised through our bespoke Computing Curriculum.

Computing Teaching by Year Group

Reception

Reception has one weekly Computing session, taught by the specialist Computing teacher.
The pupils are provided with a new unit of work each term.



Over the year, the six units are:

Term 1 - Our Digital World
Understanding and using the basic components of digital devices.

Term 2 - Robotics
Single step instructions, leading to multi-step sequences.

Term 3 - Online Safety
Knowing who to turn to for help and simple safe strategies when online.

Term 4 - Handling Data
Organising and sorting data, storing data on a digital device.

Term 5 - Programming and Problem Solving
Performing algorithms and unplugged coding.

Term 6 - Digital Creator
Becoming familiar with digital art tools.

Computing Teaching by Year Group

Reception

They children begin by working on their mouse movement and selecting skills, as well as understanding how to navigate the most used keys on a computer keyboard.

All children will learn to identify what defines a robot and how it functions, leading them on to creating their own, multi-step instructions and encountering an understanding of basic diagnostic skills.

Through age-appropriate storytelling, pupils begin to understand the hidden dangers of using the internet and how they should deal with online concerns and worries by identifying the trusted people in their lives who they can turn to when in need.

Using a range of hands-on items, the children are introduced to the concept of sorting and organising. Whilst on this journey, the children appreciate the benefits of using digital devices to store information.

To help embed the basics of computer science, children perform a range of algorithm activities designed to introduce key coding vocabulary and concepts that will form the foundation of their coding journey.

The school prides itself on providing a broad and balanced curriculum. This provides the opportunity to explore how digital software can be used to produce artistic artefacts. The children will learn how to navigate their way around a basic art package which links to their term 6 class theme of studying the seaside.

Computing Teaching by Year Group

Year One & Two

Year One & Two have one weekly Computing session, taught by the specialist Computing teacher.
The pupils are provided with a new unit of work each term.

The six units are:

Term 1 - Our Digital World
Identifying input and output devices, appreciating what makes a digital device, recognising a range of digital devices, understanding how technology can be used.

Term 2 - Robotics
More complex sequences and learning a computer language.

Term 3 - Online Safety
Understanding what information should be kept private, identifying age-appropriate games and understanding the effects of cyberbullying.

Term 4 - Handling Data
Using spreadsheets to organise data and learning how to analyse data.

Term 5 - Programming and Problem Solving
Encountering more complex algorithms, on-screen control of an object and building systems.

Term 6 - Digital Creator
An introduction into digital animation and using digital tools to mimic the style of a known artist.

Computing Teaching by Year Group

Year One and Two

Over the year, the children learn new skills, underpinned by the knowledge acquired in the previous learning. In term 1, all children will start to encounter more technical language as they begin to identify the specific hardware associated with digital devices as well as how such devices are used to enhance our everyday lives.

In Term 2, the children learn how to read and write a coding language (Logo). Through the use of robots, the children begin to generate algorithms that enable the robot to produce a specific outcome, such as drawing a 2D shape on paper.

In Term 3, as the children begin to use the school's online services more, their portfolio of online safety skills increases. The children learn more ways in which the school can help them report online safety worries, identify kind and unkind behaviour online and what we should and should not share.

In Term 4, through the use of spreadsheets, the children collect and organise a range of different data types and refine their analytical skills to draw out information from their data.

In Term 5, pupils begin to learn coding specific language, identify what programs need to function, develop the use of multiple instructions, incorporate ways of making their programming more efficient, such as using repeats and recycling sections of code.

In Term 6, the children begin to appreciate the fundamentals of digital animation by creating their own animated piece of work, linked to their class topic. Pupils in Year 2 research the style of a specific artist (Eduardo Paolozzi) and replicate this style using digital tools.

Computing Teaching by Year Group

Year Three & Four

Year Three & Four have one weekly Computing session, taught by the specialist Computing teacher.
The pupils are provided with a new unit of work each term.

The six units are:

Term 1 - Our Digital World
Understanding the world wide web and the internet.

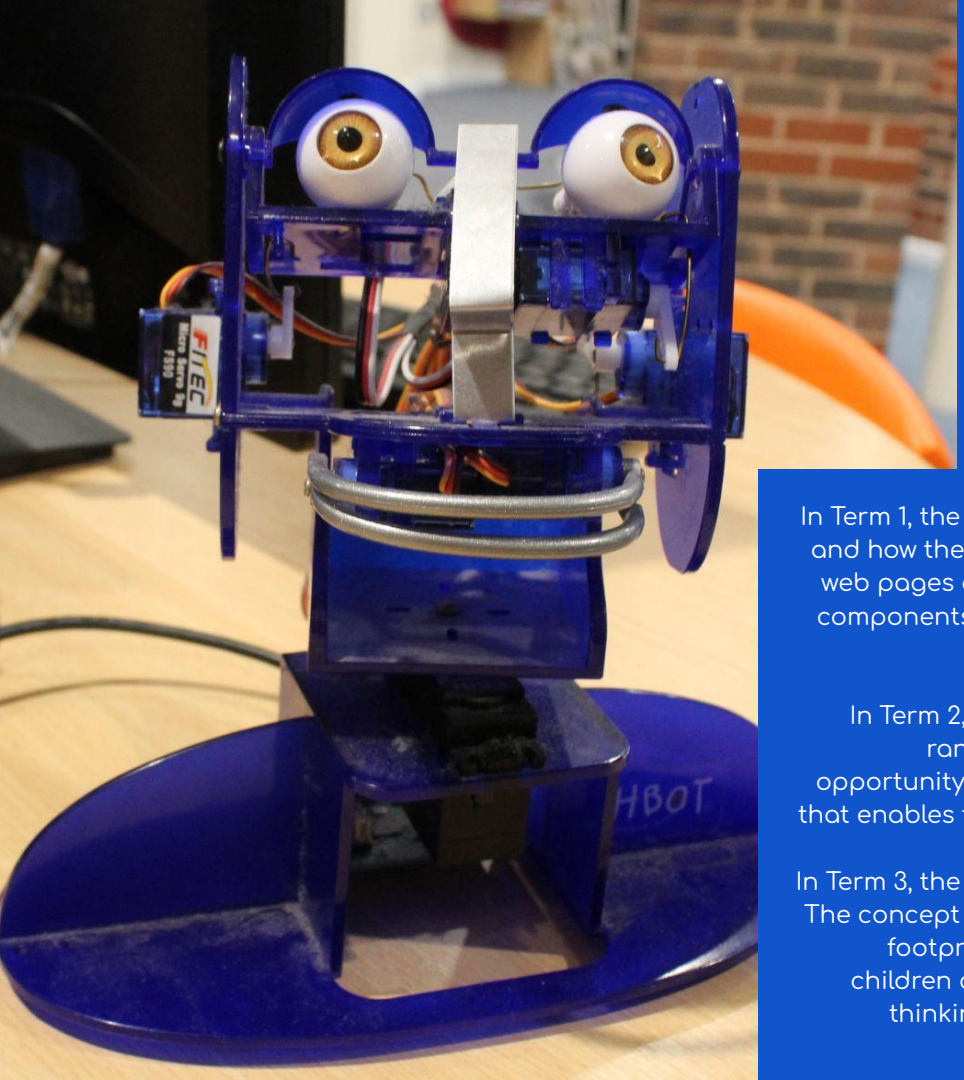
Term 2 - Robotics
An introduction into robotic sensors and variables.

Term 3 - Online Safety
Knowing what makes an online stranger, learning ways to help others online, understanding pegi ratings, creating a positive digital footprint and the basics of copyright rules.

Term 4 - Handling Data
Formatting spreadsheet cells, creating an inventory, and understanding conditional formatting.

Term 5 - Programming and Problem Solving
Creating an interactive digital story and programming using flowcharts.

Term 6 - Digital Creator
An introduction into digital animation and using digital tools to mimic the style of a known artist and the basics of digital photography.



Computing Teaching by Year Group

Year Three & Four

In Term 1, the children will learn how the internet and world wide web work symbiotically and how they enhance our lives. Specifics, such as how search engines work and how web pages are ranked are explored. The children dissect the internet into its various components to understand how it not only works as a global structure but also more locally as a LAN.

In Term 2, pupils begin working on a more complex robot (Sphero) which requires a range of control measures to successfully complete tasks. This provides the opportunity to program multiple sensors and variables to ultimately build a program that enables the robot to navigate its way through a complex sequence of instructions.

In Term 3, the pupils continue to explore what is and is not appropriate for them online. The concept of a digital footprint is explored as well as what affects a personal digital footprint. Using the knowledge the children have acquired since Reception, the children consider how they can be part of the online safety solution for others but thinking about how they can help someone that may need online safety advice.

Computing Teaching by Year Group

Year Three & Four

In Term 4, through spreadsheets, the children begin to explore the powerful tools available. As well as learning how to tailor and customise specific cells, there is an introduction into the use of conditional formatting to highlight key information. Formulas are also explored and used to help improve the efficiency of their spreadsheet work.

In Term 5, key concepts learnt from previous sessions are combined with more advanced programming techniques which culminates in an interactive story. Coding is used to develop this interactive story through a range of on-screen programmable objects and backgrounds. Year 4 pupils refine their fault diagnostic skills through the use of flowcharts and on-screen programmable real-world simulations.

In Term 6, pupils in Year 3 research the style of a specific artist (Andreas Gursky) and replicate this style using digital tools. Year 4 pupils are introduced to photography techniques (based on ideas from Darren Rowse) which helps the children to understand what makes a 'better picture'. This includes concepts such as the rule of thirds, framing and composition.

Computing Teaching by Year Group

Year Five & Six

Year Five & Six have one weekly Computing session, taught by the specialist Computing teacher.
The pupils are provided with a new unit of work each term.

The six units are:

Term 1 - Our Digital World

Compare and contrast different computers, how hardware affects software and the internal workings (components) of a digital device, analysing the positive/negative impact of technology on our planet and ways in which humans coexist with robots.

Term 2 - Robotics

Identifying the main components of a robot, advanced programming to include string variables, integer variables and nested 'if' conditions.

Term 3 - Online Safety

Understanding the effects of social media on self-image, analysing links between health and screen time, identifying fake information and revisiting copyright law.

Term 4 - Digital DT

Using two different CAD programs to create digital artefacts (on-screen and printed.)

Term 5 - On-Screen Programming

Using programmable flowcharts to build and improve systems and using Python to develop an understanding of correct syntax and real world programming.

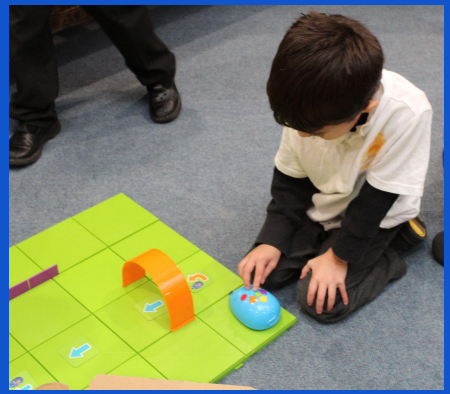
Term 6 - Digital Creator

An introduction into production and post production film techniques.

Computing Teaching by Year Group

Year Five & Six

Over the academic year, the children learn new skills, underpinned by the knowledge acquired in the previous learning.



Over the academic year, the children learn new skills, underpinned by the knowledge acquired in the previous learning. In Term 1, the children identify the similarities and differences between a range of digital devices and delve into the workings of these devices. After physically dissecting redundant laptops and locating key components, the children will go on to examine how such machines might contribute to the global e-waste collective. The internet's use of energy is scrutinised and what alternative 'greener' energies are available. The pupils complete this unit by exploring how artificial intelligence is being used in society and ways in which humans now coexist with robotic devices.

In Term 2, pupils begin to explore humanoid robotics by programming a robotic head (Ohbot) to appear autonomous and display human traits. The pupils achieve this through controlling the robot's various motors to perform specific tasks, combined with advanced programming concepts such as string and integer variables and nested 'if' statements.

In Term 3, pupils look at the physical, mental and emotional effects of social media, particularly on self image and identity. The children explore the links between health and screen time, comparing and contrasting associated data from both children and adults. Staying within the theme of social media, children explore the dangers of making friends online, adding content online and commenting online. The issue of fake information is explored, as well as techniques useful when determining the validation of online information.

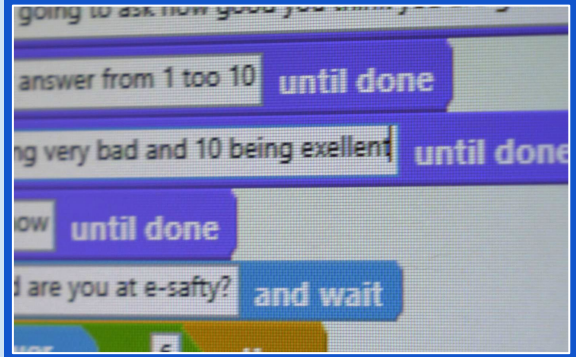
Computing Teaching by Year Group

Year Five & Six

In Term 4, children begin to work with CAD programs and understand how such programs are reliant on the use of 3 axes. In Year 5, the focus is predominantly on using CAD tools to create building structures. In Year 6, the focus shifts to printing 3D structures. The children are presented with a brief to design a money box. They are required to research existing models, use this information to design and create their own artefact, which is then printed for evaluation.

In Term 5, pupils demonstrate their knowledge of programming by combining a range of skills to create an interactive robotic Q&A program. They incorporate a range of if-then-else instructions and variables, as well as human-like motor movements, to bring the robot (Ohbot) to life.

In Term 6, pupils are immersed in the world of film by learning a range of filming and editing techniques. From scene transitions to camera movements, to filming scenes and editing software, our pupils complete this unit with a firm grip on the foundations of successful movie creating.



How is the Subject Assessed?

All KS2 Computing session contain 'Greater Depth' challenges, allowing the pupils to push their knowledge and understanding further. This process also allows the Computing teacher to obtain live assessment data by analysing a pupil's depth of understanding within this task. This, alongside other pupil work, feeds into the school's agreed formative assessment tool for foundation subjects.

Computing at Shinewater Primary School is formatively assessed onto OTrack, our online assessment tool, live during each lesson against the End of Year Expectations for each year group. A judgement is made for each child against the relevant learning objectives by the specialist teacher during each computing session. This allows teachers to ascertain the achievement of their class as a whole and to also identify any children who are potentially exceeding or below the expected standard.

Each unit of study is also accompanied by a digital questionnaire which is tailored to each group. The results of these questionnaires help inform both formative and summative assessment as well as providing gap analysis for the specialist teacher. Additionally, the questionnaires provide pupils with feedback by revealing which answers they answered correctly and incorrectly.