

Computing

INTENT- KS3

Students need to leave school with an array of computer skills to boost their employability and understanding of the modern world. At KS3, the course allows the students to develop skills and enhance them further whilst completing units designed to engage and inspire them. The students will develop mobile phone apps, learn programming languages and model the state and behaviour of real-world problems and physical systems. They will understand the different hardware and software components and how they communicate with each other. The students will analyse data and meeting the needs of known users, create, re-use, revise and re-purpose digital artefacts for a given audience, with attention to trustworthiness, design and usability. The students will learn to understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct and know how to report concerns. SEND/PP students have access to Computing classes. Each lesson is sequenced so that it builds on the learning from the previous lesson, and where appropriate, activities are scaffolded so that all pupils can succeed and thrive. Scaffolded activities provide pupils with extra resources, such as visual prompts, to reach the same learning goals as the rest of the class.

	Students will develop their KNOWLEDGE of	Students will develop their SKILLS in
7	<ul style="list-style-type: none"> knowing if a task would be best completed by humans or computers knowing that different solutions exist for the same problem knowing what is acceptable and unacceptable behaviour when using technologies and online services knowing a range of ways to report concerns knowing what 'if statements' and 'loops' are and how to use them effectively knowing what software is most suitable for a particular task different ways to keep data safe how binary is used in computing 	<ul style="list-style-type: none"> using logical reasoning to predict outcomes being able to break down a problem and create a suitable solution being able to effectively use search engines collecting, organising and presenting data and information that is suitable for the purpose making appropriate improvements to solutions based on feedback received, and comment on the success of the solution being able to create digital products for a particular audience being able to use arithmetic operators, 'if statements' and 'loops' to create a game being able to find and correct errors in programs (debugging) being able to declare and assign variables binary conversions and addition
	Students will develop their KNOWLEDGE of	Students will develop their SKILLS in
8	<ul style="list-style-type: none"> the difference between hardware and software and their role within a computer system the main functions of an operating system digital computers using binary to represent all data how an image is represented in binary whether a task would be best completed by humans or computers different solutions exist for the same problem what 'if statements' and 'loops' are and how to use them effectively which software is most suitable for a particular task how a network and the internet work different ways to keep data safe encryption and how it is used to keep data safe 	<ul style="list-style-type: none"> using a range of input and output devices binary and decimal conversions binary addition using logical reasoning to predict outcome being able to break down a problem and create a suitable solution being able to effectively use search engines making appropriate improvements to solutions based on feedback received, and comment on the success of the solution being able to use arithmetic operators, 'if statements' and 'loops' to create a game being able to find and correct errors in programs (debugging) being able to declare and assign variables using HTML to create a simple website
	Students will develop their KNOWLEDGE of	Students will develop their SKILLS in
9	<ul style="list-style-type: none"> User interface design principles and project planning techniques Collecting, presenting and interpreting data Understand how data is collected and used by organisations and its impact on individuals 	<ul style="list-style-type: none"> purpose and audience of a project project requirements user requirements Constraints Planning timescales Use a project planning tool to show: <ul style="list-style-type: none"> timescales, including tasks and sub-tasks key milestones task dependencies. Understand how data is collected and used by organisations and its impact on individuals Be able to draw conclusions and review data presentation methods and features

INTENT- KS4

Students need to leave school with an array of computer skills to boost their employability and understanding of the modern world. At KS3, the course allows the students to develop skills and enhance them further whilst completing units designed to engage and inspire them. The students will develop mobile phone apps, learn programming languages and model the state and behaviour of real-world problems and physical systems. They will understand the different hardware and software components and how they communicate with each other. The students will analyse data and meeting the needs of known users, create, re-use, revise and re-purpose digital artefacts for a given audience, with attention to trustworthiness, design and usability. The students will learn to understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct and know how to report concerns. SEND/PP students have access to Computing classes. Each lesson is sequenced so that it builds on the learning from the previous lesson, and where appropriate, activities are scaffolded so that all pupils can succeed and thrive. Scaffolded activities provide pupils with extra resources, such as visual prompts, to reach the same learning goals as the rest of the class.

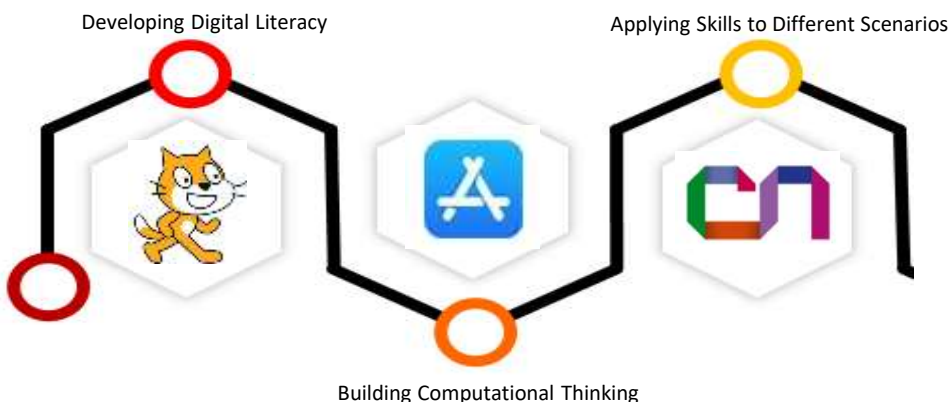
The KS4 knowledge and skills for Computing will be delivered through a 6 week Tutor curriculum delivered in Spring term.

	Students will develop their KNOWLEDGE of	Students will develop their SKILLS in
1 0 / 1 1	<ul style="list-style-type: none"> All pupils must have the opportunity to study aspects of information technology and computer science at sufficient depth to allow them to progress to higher levels of study or to a professional career. All pupils should be taught to: develop their capability, creativity and knowledge in computer science, digital media and information technology develop and apply their analytic, problem-solving, design, and computational thinking skills understand how changes in technology affect safety, including new ways to protect their online privacy and identity, and how to identify and report a range of concerns. 	<ul style="list-style-type: none"> All pupils must have the opportunity to study aspects of information technology and computer science at sufficient depth to allow them to progress to higher levels of study or to a professional career. All pupils should be taught to: develop their capability, creativity and knowledge in computer science, digital media and information technology develop and apply their analytic, problem-solving, design, and computational thinking skills understand how changes in technology affect safety, including new ways to protect their online privacy and identity, and how to identify and report a range of concerns.

CURRICULUM LESSONS ALLOCATED OVER THE 2 WEEK TIMETABLE

Year 7	Year 8	Year 9	Year 10 & 11
2	2	2	6 week programme during Tutor curriculum time.

COMPUTING CURRICULUM THEMES



Cross Curriculum links

- Maths- Spreadsheet modelling
- English- Meeting audience needs
- History- development of computers.
- Science- How computers work
- Art – Manipulating images

Year 7 - Computing Curriculum



Curriculum Theme:

Developing digital literacy

Combining the use of digital tools to produce documents and programs

Introductory unit

Who am I presentations, combining text and graphics. Familiarisation with the system, email and folders

2. Networks

This unit begins by defining a network and addressing the benefits of networking before covering how data is transmitted across networks, using protocols. The types of hardware required are explained, as is wired and wireless data transmission. Learners will develop an understanding of the terms, 'internet' and 'World Wide Web', and of the key services and protocols used.

4. Scratch

Learn programming skills in a student friendly environment, develop sequencing, variables, selection, and count-controlled iteration skills.

6. Spreadsheets

The unit uses engaging activities to progress learners from using basic formulas to writing their own COUNTIF statements. This unit will give learners a good set of skills that they can use in computing lessons and in other subject areas.

1. Clear Messages

Learners will work between different applications to create a poster and slides on a given theme. The unit is designed so that learners can concentrate on applying skills that they may have previously learnt as well as those learnt in the unit.

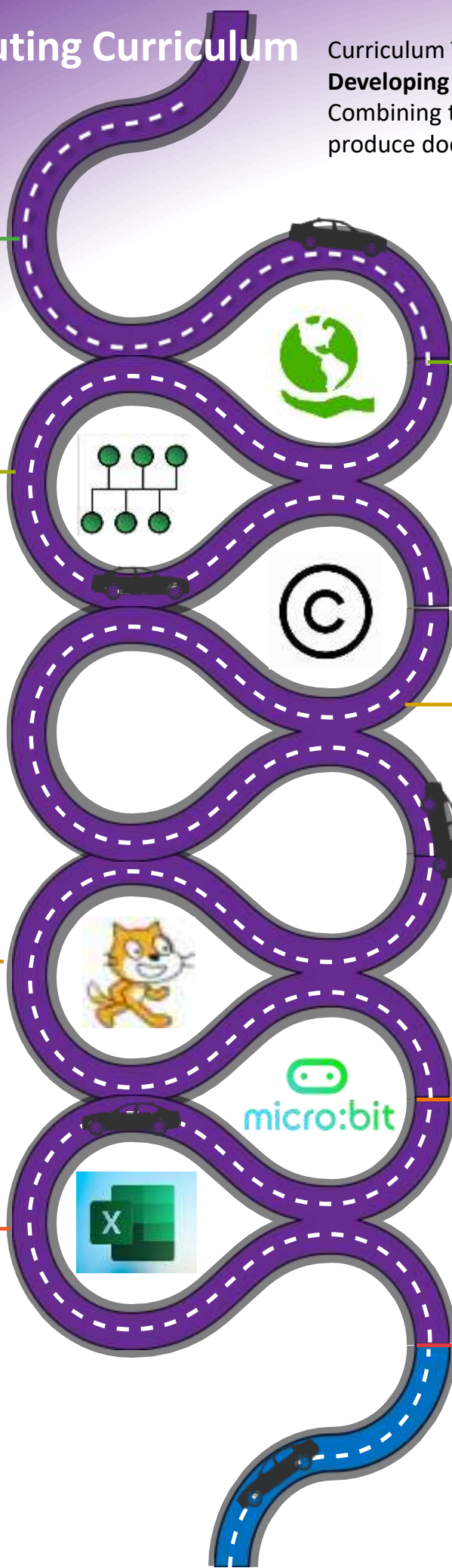
3. Using Media to Communicate

Students will develop a deeper understanding of information technology and digital literacy by using their skills across the unit to create a blog post about a real world cause that they are passionate about and would like to gain support for.

5. Microbits – Computing fundamentals

Students are introduced to the core concepts of computational thinking, programming and computer systems through unplugged activities and learning with the BBC micro:bit.

Progressing into Year 8



Year 8 - Computing Curriculum



Curriculum Theme:

Building Computational Thinking

The thought processes used in problem solving

Year 7 recap

Student's guide to the school combining text and graphics

2. Layers of Computer Systems

This unit takes learners on a tour through the different layers of computing systems: from programs and the operating system, to the physical components that store and execute these programs, to the fundamental binary building blocks that these components consist of.

4. From Clay to Silicon

Introduce binary digits to your learners as the symbols' computers use to perform these tasks and focus on the representation of text and numbers.

6. MicroBit Health Tech

Students learn about 'health tech', the use of technology to improve health. They develop and apply their knowledge and understanding of computational thinking and real-life problem-solving by working in teams to create their own prototype health tech innovation.

1. Media Vector Graphics

This unit offers learners the opportunity to design graphics using vector graphic editing software. By the end of the unit learners will have produced an illustration, a logo, or some icons using vector graphics.

3. Developing for the web

You have been asked to develop a website which contains a minimum of five pages to help to promote the travel blogs. The website pages should cover some (or all) of the destinations and may provide information on:

- Things to see and do
- How to get there
- When to go.

The website must contain an appropriate navigation system and a consistent look across all pages. It should also contain a range of images, appropriate text and any other multimedia assets

5. Mobile App Development

With this unit you can take learners through the entire process of creating their own mobile app, using App Lab from code.org. Building on the programming concepts learners used in previous units, they will work in pairs to perform user research, design their app, write the code for it, before finally evaluating and publishing it for the world to use.

Progressing into Year 9

Programming Hour of Code

There are fun activities for students of all ages, created by many partners for a variety of subjects.



Year 9 - Computing Curriculum



Curriculum Theme:

Applying skills to different scenarios

Working to solve "real world" issues

Year 8 recap

Hour of code

There are fun activities for students of all ages, created by many partners for a variety of subjects. The learners develop skills in Python and Java to create computer games in a step by step, user friendly interface.

2. Collecting, presenting and interpreting data

Many organisations collect data to help them improve their products or services. Data can be collected from a range of sources. Once collected, the data needs to be collated and analysed to allow it to become useful. Your job is to collate the data, perform some analysis and present it in such a way that it can be understood by others.

SCENARIO

A manager of a medical centre needs to ensure that all patients receive the best service and care possible. To help the manager determine this, data has been collected using two different data collection methods and collated into one dataset.

1. Exploring User Interface Design Principles and Project Planning Techniques

Designing efficient user interfaces is crucial in ensuring that users can interact with their hardware devices. The design should meet user requirements and use design principles. The designing and development of a user interface requires project planning, with clear deadlines and requirements. Once developed, the user interface should be reviewed to better meet the audience needs.

SCENARIO

A local theme park requires a digital information point. The digital information point will be used by visitors to find the location and details of attractions, facilities and special events. The information point will be accessed using touch screens positioned around the park. The audience for the information point will be adults, families with young children and visitors with accessibility needs. The language used on the screen should be clear and easy to use. The location and details of attractions, facilities and special events should be clear and accessible. The digital information point should be installed for the summer holiday.

