

Computing Curriculum Intent

At TAL we believe that Computing should truly embed a sense of wonder in our students towards the ever-changing world of technology. As one of the fastest, constantly developing subjects on offer, we aim to demonstrate to students how modern Computing really can empower us to **reach higher** and **see further**. Computing should offer the skills and experience required to **empower** our students to pursue future study and careers in the STEM field, as well as provide them with opportunities to find new passions and hobbies in the subject.

Phase One (KS3) study in Computing will expose students to a range of topics; from computer science-based fields such as binary and programming, information technology-based fields of communication and data management, to digital literacy and the development of a range of digital artifacts. This breadth of study is then bolstered through a robust **involve** offering that looks to further broaden the horizons of our purple stars and ensure that those with a keen interest in Computing have every opportunity to truly **shine brighter**.

e-Safety is of paramount importance in a modern Computing curriculum. Interleaving e-safety throughout our studies will guide students to explore the wider world and use their **Voice** in a safe and responsible way in the various digital platforms that are available.

Computing at TAL builds upon and exceeds the National Curriculum requirements, with an aim to:

- Understand how computers and computer systems work
- Develop and build our own programs
- Develop ideas using technology
- Create a range of digital content

From the above we take four golden threads that are interwoven into all aspects of teaching at TAL:

- **Computer Science** is the study of how a computer works; from the CPU and the fetch, decode execute cycle, up to programming in various languages and problem solving. It also covers logic and data representation through binary.
- **Information technology** focuses on the types of technology that exist; from types of computer, network and the various types of software that can be used on a device. Alongside this the curriculum also shows students how to use new and unfamiliar technologies in order to solve problems.
- **Digital Literacy** looks at the practical skills that we will need when using modern technology. It also has a strong focus on e-safety. The purpose of this strand ultimately is to ensure that all students are responsible, competent, confident and creative users of information technology.
- **e-safety** looks to follow not only the content of the National Curriculum, but also the RSE curriculum and common trends and concerns in and around our catchment area that may affect our students.

Computing Phase One Curriculum

The Computing curriculum in phase in is designed to build up the knowledge of students in all four golden threads. Through a spiral curriculum that revisits key topics and interleaving to develop skills and knowledge simultaneously, Computing at TAL allows deeper thinking and practical application of what they have learned during years 7, 8 and 9. An example of this would be binary at Key Stage 3. During year 7, students learn that a computer has hardware and software. They learn that programs are stored as sets of steps (instructions) that a CPU (the brain of the computer) will process. In year 8 they then learn about logic and logic gates, which links directly into the circuits switching on and off (1 and 0) for binary. This then flows into Year 9 when we look at how to perform binary shifts and advanced programming concepts such as arrays with an index of 0 and why this is a valid number.

This carefully curated curriculum aims to not only meet the expectations of the national curriculum, but truly exceed it in developing e-literate students who can thrive at GCSE level. We are aware of the restricted access to ICT resources in the current climate at Primary level; which was only further exasperated by the COVID Pandemic and we aim to level-up students with practical knowledge within the first few terms of year 7 as you will see in the breakdown below:

	Topic 1	Topic 2	Topic 3	Topic 4	Topic 5
Year 7	Induction & Email: Logging on to the network User areas and folders Office 365 and email Email etiquette Email safety	Hardware & Software: What is a computer? What is hardware? What is a peripheral? What is the motherboard? What is software? Where do we store software? What is the FDE cycle?	Program Flow & micro:bits: What is a flowchart? What is selection in a program? What is iteration in a program? What is a micro:bit? What is decomposition? How does a computer make random numbers?	Design Principles & e-safety: What is an online world? What are the dangers of being online? How do we create a leaflet? What is phishing and spam? What is cyberbullying?	Spreadsheets and Data Modelling: What is a spreadsheet? How do we format them? What is a formula or a function? How can we filter data? How do we design a spreadsheet for a purpose? What is data modelling?
Year 8	Design Principles & e-safety 2: How does a computer display images? Vector vs Bitmap Resolution, File Types and Compression Illustrator Introduction Tracing Images Planning Images Logo Development	Computing and Computation: Hardware recap: Input, Process, Output Central Processing Unit (CPU) FDE (Fetch-Decode-Execute) Cycle Software and storage (RAM and ROM) Secondary storage (CD/ DVD/ FLASH) E-safety: Protecting our data	Logic, Binary and Programming: Logic and Circuits in the CPU Logic Diagrams Binary Introduction & Conversion to Denary Binary conversion to/from Character Sets Bitmaps and Images What is a program? Python Introduction Python Variables	How Computers Communicate: How can computers share signals? What are the different types of network? Wired vs Wireless networks The internet The digital divide	Python Turtle: Modules and Turtle Sequence with Turtle Selection with Turtle Iteration with Turtle (inc. subroutines)
Year 9	Python Programming: Python recap Python selection Python iteration Python subroutines Searching algorithms Sorting Algorithms Putting it into practice	Application Development: What makes a smartphone smart? Apps and Idea Generation App Proposal User Interfaces and Designs App Designs App Development App Development	How the Internet Works: What is a network? The internet vs the WWW Internet of things (real-world systems) Online Relationships Setting and Images Safety Recap	CPU and Binary: CPU instructions - binary recap Binary addition + Overflow errors metadata- turning binary into meaningful content	Project Development: What is project management? What is concept design? How to develop a concept How to pitch a concept