St Bede's Inter-Church School

'Cum Deo - With God'

Computing KS3 Curriculum map

The primary intent for KS3 computing is to provide students with a foundational understanding of ICT and computer science. The course covers an understanding of the Internet and World Wide Web, e-safety, network security, computer systems, data representation, digital literacy in office 365 and other applications, and an introduction to programming. We also consider the impact of computing upon society and the environment.

KS3 Computing at St Bede's					
1. Computing Basics	**2. Computer Systems and Data Representation**	**3. Networks, Cybersecurity and E-safety**	**4. Digital Literacy**	**5. Algorithms and Programming Concepts (Scratch and Python)**	**6. Computing and society**
Intent: Familiarise students with school computing infrastructure, software and expectations	***Intent:*** Develop foundational knowledge of computer systems	***Intent:*** Raise awareness about online security and instil good online practices and digital citizenship	***Intent:*** Develop digital literacy skills for everyday use	***Intent:*** Introduce programming concepts using Scratch and Python, foster excitement about programming	***Intent:*** Showcase acquired skills and creativity and consider the uses and impact of technology in society
- Understanding school-specific computing protocols - Connecting to the school network and shared resources - Creating and managing passwords securely -Introduction to Office 365 and e-praise -URLs and searching the web -Software and hardware basics	- Exploring computer hardware and software - Exploring the functions of the CPU, memory, and storage - Introduction to operating systems - Basics of binary and hexadecimal - Introduction to data representation (text, images, numbers)	- Introduction to local area networks (LANs) and wide area networks (WANs) - E-safety guidelines and responsible online behaviour - Recognizing and avoiding online risks (e.g. phishing) - Cyberbullying awareness and prevention. - Technology and health and wellbeing	- Introduction to file management - Using email for communication - Basic troubleshooting techniques - Digital literacy: Creating and editing documents - Practical exercises in using Microsoft Office (Word, PowerPoint, Excel) -Advanced projects in standard applications -IDE's	-Computational thinking - Designing Algorithms using flowcharts and pseudocode - Introduction to Python as a text-based programming language, and Scratch for visual programming -Translators, errors and testing - Variables, data types, and basic input/output - Understanding control structures (loops, conditionals) -Advanced techniques: sub-programs and data structures	- Using digital tools creatively in a final project and presentation - Consider how technology is used in business, media, STEM and beyond -Introduction to the legal, ethical, cultural and environmental considerations of computing - Understanding disinformation, censorship, and surveillance
Fertile question: How can computers help me to learn? What is the difference between data and knowledge?	*Fertile question:* How can the physical components of a computer give rise to virtual worlds?	*Fertile question:* What are the paradoxes of digital connectivity? (E.g. bridging distances while potentially isolating individuals)	*Fertile question:* How can something as structured as binary and code create limitless possibilities? What can we create?	*Fertile question:* Can a program that's just a series of "yes" and "no" decisions create complex and creative outcomes? Let's see what we can build!	*Fertile question:* Can something as basic as "0" and "1" truly capture the essence of human communication? Who might have a different perspective?

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Computing KS4 Curriculum map

We aim to foster a passion for computer science and ICT by engaging students in creative problem solving, and by developing a deep understanding of the principles underlying the creation and application of technology.

The KS4 curriculum provides a structured progression of topics and skills over three years, with year 9 operating as a stepping stone between KS3 and KS4. We take a student-centred approach based upon evidence-based practice on differentiation. This means that each year of study contains all elements in the curriculum map. We advance skills and concepts by returning to them through a variety of engaging examples and practical activities.

KS4 Computing at St Bede's					
1.Data and knowledge	**2.Computer Systems**	**3. Networks**	**4. Algorithms**	**5. Programming (Python, C++)**	**6. Computing and society**
Number systems and character sets: What were the different systems in use at different points in society? Which systems are used today and *how* are they used?	**Architecture and hardware:** when we look inside a computer, what do we find? How is abstraction used to help us cope with complexity?	**E-safety:** How can we recognise dangers relating to technology use? What can we do if we are in danger, or are worried about someone else?	**Problem solving:** How can we break down problems to make them easier to solve? How can we automate problem solving?	**Programming languages, syntax and translators:** What are the different programming languages for and what can we do with them? How are high level languages translated into 0's and 1's?	**Future Technology:** How can school prepare you to use technology which hasn't yet been invented?
Patterns and bits: How do we use mathematical ideas in computational thinking? How can we do calculations with bits?	**Software and design:** What is the purpose of different types of software? How is software used? Let's learn how to use it! Where does software end and the physical world begin?	**Wired and Wireless Networks:** How does packet switching enable almost instant access to resources on the other side of the earth? How do physical components interact with rules and protocols?	**Efficient Algorithms:** Do computers think? How can we teach computers to think like us? Can we think like a computer?	**Programming projects:** How can we use software to create software? How do we design, test and use a program? How can we make our program better? Let's do it!	**Ethics, social change and the environment:** Have computers made the world a better place? Who might agree or disagree?
Data representation and structures: What is the difference between knowledge and data? Is it possible to store or access all the books, art, and music in the world on one computer? How?!	**Logic gates and Languages**: How do we build up from binary electrical signals (0's and 1's) to logical operations and arithmetic calculations?	**Security and the Law:** Why is our data valuable to us, to business, to hackers? How do we create systems and software robust to attack? What does the law say about misuse?	**Algorithms:** How do computer scientists represent methods for solving problems using notation? How do we best communicate our solutions?	**Advanced programming and careers:** How can we solve increasing complex problems? What are the challenges and how are they met in different industries? What might you want to do in the future?	**Digital humans:** How do we make the best use of digital devices, and how do we avoid the downsides of using technology?