

Computer Science and Careers

Most units of work have the opportunity to discuss careers and this is shared with pupils. This allows pupils to see how the subject they are covering relates to the real world and how these skills can be applied. It gives the topic a purpose rather than just a task to complete. By pupils understanding the purpose of what they are doing will allow them to make further progress as it will give them something to potentially aim for in the future.

Examples of Curriculum Links to Futures - Covered

	Curriculum Theme/Topic	How Do You Link This Theme/Topic to Careers?	What Careers Related Extracurricular Opportunities Are Offered?	What Employer/Employee Encounters Are Offered?
Year 7	1. ESafety - Passwords, the classroom, Email, presenting to audiences, cyberbullying, who are you talking to?	To understand that with the enhancements of technology, the internet also needs to be policed for things such as cyber and hate crime.		Employee encounters being organised. Tasks being organised around the visits.
	2. System architecture – Primary hardware components and their uses, peripherals, secondary storage and units of data.	An understanding of computer components can underpin their knowledge in becoming a Computer Systems Architect.		
	3. System software – OS and application software	This topic introduces different types of software such as operating systems and utility which can lead to a career in Software Developer.		
	4. Careers in the curriculum 1 - Understand the need	Links to how problem solving will apply to careers within Computer Science		

	for Computer Science skills and how they are used in the workplace - Problem solving.	and jobs that use problem solving.		
	5. Wireless and wired networks - Topologies and network hardware	This topic introduces different networks and how networks are created which can lead to a career as a Network Technician.		
	6. Careers in the curriculum 2 - Understand the need for Computer Science skills and how they are used in the workplace - Mathematics.	Links to how mathematic skills apply to careers within Computer Science and jobs that use mathematical skills.		
	7. System security – Threats including malware and protection	Links to the Cyber Security industry.		
	8. Algorithms and Computational Thinking	An understanding of algorithms and how computers work is needed to develop programs of the future for things such as AI. Links to careers related to autonomous technology such as traffic light systems.	Various books and resources are available to pupils in the LRC and computing classrooms to enhance their computing skills outside of the classroom. UK Bebras Challenge to be completed by all pupils. Codementum International competition offered to all pupils.	

	9. Programming techniques – Visual programming	An understanding of algorithms is needed to prepare for the programming elements for different ideas e.g. Google Software Engineer.	Various books and resources are available to pupils in the LRC and computing classrooms to enhance their computing skills outside of the classroom.	
Year 8	1. E-safety – Staying safe online and online reputation	To understand that what is said online can have an effect and that you are not safe behind a computer screen, you are not invisible and careers such as computer forensics that are used to find these things out.		Employee encounters being organised. Tasks being organised around the visits.
	2. System architecture – How components work together and integrate	An understanding of computer components can underpin their knowledge in becoming a network technician.		
	3. System software - Operating systems and different types of software	This topic introduces different types of software such as operating systems and utility which can lead to a career as an IT support engineer.		
	4. Wired and wireless networks	This topic introduces different networks and how networks are created which can lead to a career in Network Engineering.		

	5. System security – Network attacks	Links to the Cyber Security industry such as Cyber Security Analyst.		
	6. Careers in the Curriculum 1 - influential people and jobs within the computing industry	It allows pupils to gain a deeper understanding of Computer Science and the jobs that are available to them. It gives them an opportunity to see the range of people who contribute to Compute Science.		
	7. Algorithms – Flow diagrams, sequencing and creating algorithms	Links to careers that will use algorithms to solve problems such as a Software Algorithm Engineer.	<p>Various books and resources are available to pupils in the LRC and computing classrooms to enhance their computing skills outside of the classroom.</p> <p>UK Bebras Challenge to be completed by all pupils.</p> <p>Codementum International competition offered to all pupils.</p>	
	8. Careers in the Curriculum 2 - research	Pupils will have had the opportunity to apply some of their Computer Science knowledge by creating algorithms. This shows pupils all sides to Computer Science and it is important for pupils to understand		

		that not all pupils have the same strengths and interests.		
	9. Programming techniques – Text based programming languages - operators, algebra, errors, data types, constants and variables, inputs, selection, nested IF, Else IF, Iteration	This topic introduces different programming techniques which can lead to a career in Games Design and Games Development.	Various books and resources are available to pupils in the LRC and computing classrooms to enhance their computing skills outside of the classroom.	
Year 9	1. E-safety – Fake news and protecting yourself online	To recap how to look after themselves online following the summer break and what they should do about it. Pupils are also reminded that not everything they read is real. This relates to careers such as The Online Safety team at Facebook.	UK Bebras Challenge to be completed by all pupils. Codementum International competition offered to all pupils.	Employee encounters being organised. Tasks being organised around the visits.
	2. System architecture – memory, secondary storage, Von Neumann architecture.	An understanding of computer components can underpin their knowledge in becoming an Implementation Specialist.	iDEA bronze award has been introduced to enhance employability.	

	<p>3. System software – operating systems, utility/application software and its uses.</p>	<p>This topic introduces different types of software such as operating systems and utility which can lead to a career in Systems Software Engineer.</p>		
	<p>4. Careers in the curriculum 1 - Skills needed within the workplace</p> <p>5. Careers in the curriculum 2 - Careers in the curriculum 2 - Careers of the future</p>	<p>It allows pupils to understand that there are lots of skills that are needed for different careers. It allows pupils to look for careers that may interest them and what skills will be needed to achieve those careers.</p> <p>Once pupils have looked into jobs that currently exist, pupils should start to think about the future and jobs of the future. It allows them to think about what could be. It gives pupils the opportunity to look at what we already know and how we can move forward and how they could possibly be a part of that.</p>		
	<p>6. Wireless and wired networks – Topologies, hardware components and the internet.</p>	<p>This topic introduces different networks and how networks are created which can lead to a career such as Information Systems Managers.</p>		

	7. System security – Network attacks and malware	Links to the Cyber Security industry such as Forensic Computer Scientists.		
	8. Ethical, legal and cultural issues - Impact of digital technology including health and safety and the environmental issues surrounding technology	Links to career in law or commercial business e.g. Data Scientist.		
	9. Computational Thinking and creating algorithms	Links to careers that will use algorithms to solve problems such as a Software Algorithm Engineer.		
	10. Programming techniques – Text based programming languages - operators, algebra, IDE's, data types, variables and constants, inputs and outputs, selection (including nested and elseif), loops and errors.	This topic introduces different programming techniques which can lead to a career in Web design.	<p>Various books and resources are available to pupils in the LRC and computing classrooms, specifically:</p> <ul style="list-style-type: none"> ● Python flashcards ● Coding for beginners using python ● Python basics levels 1 and 2 ● Computer coding, python projects for kids ● Computer coding, python games for kids <p>to enhance their computing skills outside of the classroom.</p>	

Year 10 and 11 - CS	1. Components of a Computer System	An understanding of computer components and the software that is run on different devices can underpin their knowledge in becoming Systems analysts and software developers.	UK Bebras Challenge offered to all pupils. Codementum International competition offered to all pupils. iDEA is offered to enhance employability.	Employee encounters being organised. tasks being organised
	2. Data Representation	Links to how binary and hexadecimal are used to represent data and used to understand jobs such as Application Developers.		
	3. Networks	This topic introduces different networks and how networks are created which can lead to a career in Network Technicians.		
	4. Issues	Links to career in law or commercial business e.g. IT Consultant.		
	5. Algorithms	Links to careers that will use algorithms to solve problems such as a Software Algorithm Engineer.	Various books and resources are available to pupils in the LRC and computing classrooms, specifically: <ul style="list-style-type: none"> ● Python flashcards ● Coding for beginners using python ● Python basics levels 1 and 2 ● Computer coding, python projects for kids 	
	6. Programming	Develop software for the games industry or for commercial and organisations. E.g. Games Developer, Ethical Hacker.		

			<ul style="list-style-type: none"> • Computer coding, python games for kids <p>to enhance their computing skills outside of the classroom.</p>	
	7. Design, Testing and IDE's	Links to careers in games development. E.g. Games Tester.		
	8. Careers lesson 1 - Exploration and inspiration for career skills and how they relate to the workplace.	This will set a goal for the start of KS4 to show them what they could achieve, aim for. It will give pupils the motivation to work hard to achieve potential goals.		
	9. Careers lesson 2 - Knowledge in Computer Science - Programming (careers in computer science)	Links to understand how the different skills we have previously discussed are used within jobs, specifically networking.		
	10. Careers lesson 3 - Skills in computer science – Creativity (careers in computer science)	It is important that pupils understand that creativity and problem solving go hand in hand. When pupils want to develop new ideas, programs, apps etc they will need to think creatively when writing that program. It may not be obvious how to solve a particular problem eg app design.		

	11. Careers lesson 4 - Computer Science - Careers in computer science (visit)	To give pupils real life experiences of Computer Science careers.		
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Applying Computer Science Knowledge to The Workplace

Our pupils will apply the knowledge they are gaining from studying Computer Science to a variety of workplace scenarios in the following ways.

Knowledge Lesson Title	Year Group	Within Which Unit (SoW)
Computing Careers	Year 8	This follows on from E Safety, systems architecture and software, data representation, networks and security and legal and ethical issues as it allows pupils to gain a deeper understanding of Computer Science and the jobs that are available to them.
Careers in Computing research	Year 8	Pupils will have had the opportunity to apply some of their Computer Science knowledge by creating algorithms. This shows pupils all sides to Computer Science and it is important for pupils to understand that not all pupils have the same strengths and interests.
Careers of the future	Year 9	Once pupils have looked into jobs that currently exist, pupils should start to think about the future and jobs of the future. It allows them to think about what could be. It gives pupils the opportunity to look at what we already know and how we can move forward and how they could possibly be a part of that.
Exploration and inspiration for career skills and how they relate to the workplace.	Year 10	At the start of KS4 to set pupils a goal as to what they could achieve, aim for. It will give pupils the motivation to work hard to achieve potential goals.

<p>Knowledge in Computer Science - Programming (careers in computer science)</p>	<p>Year 10</p>	<p>Programming and understanding algorithms is a key part to Computer Science and pupils need to understand how these skills build into the real world. This gives pupils the opportunity to gain knowledge of the software development process, including iterative design principles. They will understand how to complete the initial concept and analysis stages, as well as design, implementation, testing routines and evaluation of the completed solution.</p>
<p>Computer Science - Careers in computer science (visit)</p>	<p>Year 11</p>	<p>This will be placed at any point in the KS4 curriculum depending on the time available from outside visitors.</p>

Using Computer Science Skills in the Workplace

Our pupils will see the correlation between the skills they use in (subject) lessons and the skills that are used in the workplace, by looking in detail at 7 skills and trying school-based and workplace-based tasks for each skill.

Skills Lesson Title	Year Group	Within Which Unit (SoW)
Skills in computer science – Problem Solving (careers in computer science)	Year 7	After pupils have completed E Safety, systems architecture and systems software, pupils will have an understanding that computers will require someone to break down these problems to enable the computer system to work. This is a perfect place to add this unit of work as it then will lead very nicely to how the computer will do this with data representation.
Skills in computer science – Mathematical equations (careers in computer science)	Year 7	Before pupils learn about algorithms and programming, it will prepare them for the following units of work. Their understanding of data representation is key as well as how data is transferred and how.
Skills needed in the workplace	Year 9	After Esafety, systems architecture and systems software it allows pupils to understand that there are lots of skills that are needed for different careers. It allows pupils to look for careers that may interest them and what skills will be needed to achieve those careers.
Skills in computer science – Creativity (careers in computer science)	Year 11	Within Computer Science, it is important that pupils understand that creativity and problem solving go hand in hand. When pupils want to develop new ideas,

		programs, apps etc they will need to think creatively when writing that program. It may not be obvious how to solve a particular problem.
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