Computer Science Super Curriculum KS3

Computational Fairy Tales by Jeremy Kubica. A romp through the principles of computational thinking, illustrating high-level computer science concepts, the motivation behind them, and their application.	**Algorithms to Live By: The Computer Science of Human Decisions.** A fascinating exploration of how computer algorithms can be applied to our everyday lives.	**Where could Computer Science take you?** Carry out some research to find out about some unusual careers with the tech and Compute Science industry. Digital locksmith? Drone operator? Professional hacker?
Map of Computer Science. A fantastic short video summarising the field of computer science. Map of Computer Science (youtube.com)	**BBC Click.** Watch this weekly BBC television programme covering news and recent developments in the world of consumer technology and innovations. BBC News - Click	**Where it all started** Watch the TedTalk on The birth of the computer. | George Dyson George Dyson: The birth of the computer (youtube.com)
No more teachers. Write a short essay debating the following question - Will computer assisted education replace the need for teachers in the future?	**The year 2100.** Imagine that it is the year 2100. What will the world be like? How will technology have changed? What new inventions will have been created? Sketch a picture of a large city giving a perspective on what you think the world will be like in 2100.	**Intelligent Machines.** Write a short essay debating the following question – Are computers more intelligent than the people who make them?
Bebras Check out some of the brilliant computational thinking challenges and develop your problem solving skills at http://www.bebras.uk/	**Computer Science Fundamentals.** A collection of interactive quizzes that will help you master computer science fundamentals. Courses | Brilliant	**Raspberry Pi** Why not get yourself a credit card sized computer? There are so many projects you can complete with this tiny computer. Take a look here for inspiration. Projects | Computer coding for kids and teens | Raspberry Pi
Create your own website Use this Codeacademy tutorial to develop your skills using HTML and CSS to build your own website. Introduction to HTML - Learn HTML | Codecademy	**Python** Develop your Python programming skills by challenging yourself to complete as many tasks on Snakify as you can. https://snakify.org/	Centre of Computing History - Plan a visit to the Centre of Computing History Rene Court, Coldhams Road, Cambridge, CB1 3EW http://www.computinghistory.org.uk/

📖	Reading Task	✂	Creative Task
🖥	Research Task	✍	Writing Task
👀	Watching Task	💡	Student – Led Task
👂	Listening Task	📍	Trip or Visit

The Register The Register (nicknamed El Reg) is a British technology news and opinion website. Keep up to date by subscribing and reading news articles regularly. The Register: Enterprise Technology News and Analysis	**The Pattern on the Stone** **The Simple Ideas That Make Computers Work by Daniel Hillis** A short but interesting read explaining the basic concepts of the computer in everyday language. The pattern on the stone : the simple ideas that make computers work : Hillis, W. Daniel : Free Download, Borrow, and Streaming : Internet Archive	**The GCHQ Puzzle Book** *Why not pit your wits against the people who cracked the Enigma?* This book will have you scratching your head for hours trying to solve some challenging problems. The Turing Challenge - GCHQ.GOV.UK
The questions computers have never answered There are still some problems which computers and their designers are yet to solve. But what are they? WIRED - The Latest in Technology, Science, Culture and Business | WIRED	**Algorithms to Live By** **The Computer Science of Human Decisions** A fascinating exploration of how computer algorithms can be applied to our everyday lives. Algorithms to Live By - The Computer Science of Human Decisions by Brian Christian and Tom Griffiths	**Making all knowledge computational** Watch the TedTalk on Computing a theory of everything | Stephen Wolfram Computing a theory of everything | Stephen Wolfram (youtube.com)
BBC Click Watch this weekly BBC television programme covering news and recent developments in the world of consumer technology and innovations. BBC News - Click	**The story of computing** This Guardian blog talks about the Computing universe and the evolution of computers. The story of computing - podcast | Science | The Guardian	**The Internet of Things** Probably the most pervasive trend is the Web of Things, where just about everything we interact with becomes a computable entity. Research how future developments in this area may change or revolution
Artificial Intelligence Write a short essay debating the following question - Will Artificial Intelligence Replace Mankind?	**CyberFirst** Get hands on with Cyber Security course run by GCHQ. They offer a variety of residential and non-residential courses. www.gchqcareers.co.uk	**Build your own** Looking to purchase a new computer or laptop? Well, instead your challenge is to build your own! Purchase components separately to piece together in creating your own system.
SQL Use these Khan Academy tutorials to learn how to use SQL to store, query, and manipulate data. Intro to SQL: Querying and managing data | Khan Academy	**Python** Develop your Python programming skills by challenging yourself to complete as many tasks on Snakify as you can. Teach Python 3 and web design with 200+ exercises - Learn Python 3 - Snakify	**Bletchley Park** Plan a visit to the home of codebreaking at Bletchley Park – The Mansion, Bletchley Park, Sherwood Drive, Bletchley, Milton Keynes, MK3 6EB Bletchley Park | Home
Perscoding Put together a team and take on other year 7-11 students across this country in some really challenging coding tasks! Competition format – The Perse Coding Team Challenge (wordpress.com)	**CyberDiscovery** Take part in the calleges offered at CyberDiscovery to see if you have what it takes to be a cyber security expert! (joincyberdiscovery.com)	**RenderMan** Why not download the software that Pixar uses to make award winning films and take part in the online course in collaboration with Khan Academy! Pixar in a Box | Computing | Khan Academy

Computer Science Super Curriculum KS4

The Register
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https://www.theregister.co.uk/

Algorithmic Puzzles by Anany Levitin and Maria Levitin
The emphasis lies in training the reader to think algorithmically and develop new puzzle-solving skills.

How Google works by Eric Schmidt and Jonathan Rosenberg
How Google Works shines a light on the hiring and operating processes of Google, which have enabled it to come up with great products continuously and stay visionary over the past 17 years.

Algorithms to Live By
The Computer Science of Human Decisions
A fascinating exploration of how computer algorithms can be applied to our everyday lives.

Mysteries of the mind can be solved
A brain in a supercomputer | Henry Markram A brain in a supercomputer | Henry Markram (youtube.com)

Big Data
Watch the TedTalk on The year open data went worldwide | Tim BernersLee Tim Berners-Lee: The year open data went worldwide (youtube.com)

AI at MIT
Take a look at this fascinating series of lectures on Artificial Intelligence by Patrick Winston at MIT. Lecture 1: Introduction and Scope | Artificial Intelligence | Electrical Engineering and Computer Science | MIT OpenCourseWare

No Touch Interfaces
Forbes ranks no touch interfaces within the top five trends that will drive the future of technology. What can you find out about no touch interfaces? How may they benefit future technological developments?

P versus NP problem
This is a major unsolved problem in Computer Science. If the solution to a problem is easy to check for correctness, is the problem easy to solve? What do you know about P vs NP? Do you think this problem will ever be solved?

Quantum Computing
Shor's Algorithm focusses on quickly factorising numbers into primes. Write a short essay summarising how the birth of quantum computing allowed for efficient integer factorisation. "15" was factored on quantum hardware twenty years ago | IBM Quantum Computing Blog

Spark
Spark is an ongoing conversation about our rapidly changing world. Along with you, host Nora Young explores how technology, innovation and design affects our lives.
Home | Spark with Nora Young | CBC Radio

Programming Throwdown Programming Throwdown offers a general introduction to a wide range of programming-related topics in an interesting and engaging manner.
Programming Throwdown

Advanced JavaScript
Use these Khan Academy to combine JS, and mathematical concepts to simulate nature in your programs Advanced JS: Games & Visualizations | Khan Academy

Project Euler
Test your problem solving and computational thinking skills through a series of challenging
About - Project Euler

The National Museum of Computing
Plan a visit to The National Museum of Computing - Bletchley Park MILTON KEYNES MK3 6EB The National Museum of Computing (tnmoc.org)

MOOCs
Why not take one of the many online courses delivered by some of the best teachers/schools to further your Computing Skills. Topics range from AI to security to big data. Some courses can even count as credits towards a degree! Check out the list at Best Online Computer Science Courses and Programs | edX

What's an algorithm? - David J. Malan
Have a look at this great Ted Talk! Try to brainstorm and write up and idea of a problem that you think can be solved with Computer Science.
What's an algorithm? - David J. Malan (youtube.com)

AI and Machine Learning | Rise of AI Robots | AI 2022 |
Artificial Intelligence (AI) is currently the hottest buzzword in tech. Here is a video on the role of Artificial Intelligence and its scope in the future.
AI and Machine Learning | Rise of AI Robots | AI 2022 | ElonMusk BillGates SundarPichai|Simplilearn (youtube.com)