Year 10 – Ethical, legal and environmental impacts
Computer Science

Rationale and Context of Unit:	Core curriculum content:	Tier 2 & Tier 3 vocabulary explicitly taught:		
Computer scientists are members of society and have duties and responsibilities to the other people living around them. Computer science has led to great and profound changes to all aspects of people's lives, including communication, medicine, education, work, leisure, shopping, commerce and transport. The new technologies have led to new **legislation** to control these developments, and in particular to address concerns about privacy. The Data Protection Act provides essential safeguards when personal data is collected and stored online, and the Computer Misuse Act provides sanctions against criminals who try to gain unauthorised access to computer systems. Trying to log in by guessing someone's password without authorisation is a criminal offence. In addition to legal aspects, computer scientists and society in general must also consider their ethical responsibilities. Behaving ethically means doing things that society recognises as being good, or acting in ways that individuals and societies think of as reflecting good values. Protecting the environment is considered to be ethical, but the manufacture, use and disposal of devices such as computers, mobile phones and tablets often causes environmental harm. To be ethical, these effects must be minimised.	**Year 10: Ethical, legal and environmental impacts** **Ethical:** Ethics are moral principles, or rules, which govern a person's attitudes and behaviour. **Environmental:** Environmental concerns are those where the manufacturing and use of computers has had a negative impact on the environment. **Legal:** Computer use has brought new concerns and new crimes. With the rise of the internet, computers are increasingly being used for illegal activities. **Programming:** Python	**Ethical** Online Gambling Cyber Squatting Biometrics	**Legal** Source Code Open Proprietary Licence Key Malware Phishing Shouldering Blagging Legislation Computer Misuse Act 1990 Data Protection Act	**Environmental** Resource Material Distribution Energy End of life E-waste Plastic Metal Toxic

Challenge and Support:	Worldwide learning / links to 21st century:	Cultural capital/ Industry/ Enrichment:

This scheme of learning aims at widening students understanding of current ongoing issues in society. The scheme of learning should be adaptive to current documented issues from reputable news outlets.

Students often struggle to understand impacts of people other than themselves so open discussions are a good platform to get students to understand other stakeholder's points of view.

All students read sections from the book Clear Revise AQA Computer Science 8525 to reinforce more complex elements of the course. This is a bookable resource from the school library.

Electronic student workbooks have been create for students to independently research and evidence their understanding. Exemplar work is then displayed to the class to ensure a good standard of work is created. Python is a general coding language that enable students to transfer their knowledge onto Post-16 courses with ease.

Computer Science is a very relevant aspect of our day to day lives. The scheme of learning has three main topics; ethical, legal and environmental issues. These topics are unfortunately highlighted in society at present due to the ongoing such a bullying through social media to climate changes. More positive impacts of these topics would be the development of automotive manufacturing or the development of bionic limbs.

All of these impact us in different ways through mental health to how much we pay for items. The exam board has stated that examined content Cyber security, mobile technologies, wireless networking, cloud storage, hacking, wearable technologies, computer implants and/or autonomous vehicles.

Ethical;
https://www.bbc.co.uk/news/business-45216554
Legal;
https://www.bbc.co.uk/news/uk-63736573
Environmental;
https://www.bbc.co.uk/news/science-environment-63245150

To ensure that the content is relevant and up to date for our student's links have been made with the following to further develop the learning experience of our students.
Worldwide:
MSI Defence Systems Ltd: Norwich
Local:
East Norfolk Sixth Form College

Historical, Social, Moral, Spiritual, Cultural context:	Cross curricular links/ literacy/numeracy:	Common misconceptions:
There has been a significant growth in cyber criminality in the form of high-profile ransomware campaigns over the last year. Leaked personal data leaving victims vulnerable to fraud, while lives were put at risk and services damaged by ransomware campaigns affected providers such as the NH. Tactics are currently shifting as businesses are targeted over individuals and although phishing attacks on individuals are increasing, fewer are falling victim as people have become more alert. In 2022, 5.3 billion mobile phones will be thrown away the international waste electrical and electronic equipment (WEEE) forum says. Data highlights the growing environmental problem of "e-waste" with just	**Gatsby Benchmark:** https://www.bbc.co.uk/bitesize/articles/z77f7nb https://www.youtube.com/watch?v=b_L3jgr97FM&t=23s https://www.youtube.com/watch?v=pUpk63YaJbM&list=PLrlHJKjLB-oluxTpES8oK1dOtkjtLyuLL&index=16 **STEAM Ambassadors:** Students will be awarded a STEAM ambassador badges if they have been identified for doing exceptional work either academically or practically within this Design Technology curriculum. **Cross Curricular links:**	Perhaps the most popular and potentially dangerous misconception about AI is that it will put people out of work. Many people were concerned with the World Economic Forum (WEF) report estimating that by 2025, 85 million jobs may be displaced by a shift in labour division between humans and machines. However, in the coming years, this only means the disappearance of entry-level positions that involve routine tasks. While AI will radically change how work is done and who does it, the technology's greater impact will be to complement and enhance human capabilities rather than replace them.

over 17% of the world's e-waste is properly recycled - but the United Nations International Telecommunication Union has set a target to raise that to 30% by next year. E-waste is the "fastest growing and most complex waste streams that affects both human health and the environment, as it can contain harmful substances". In the UK, more than 20 million unused but working electrical items, worth as much as possibly £5.63bn, are currently hoarded in UK homes.
It also calculated that the average UK household could sell unwanted tech and raise about £200.

Self-driving cars have captured people's imagination for decades. In their minds, fully autonomous vehicles (Avs) will be able to operate themselves without any human intervention. Despite the advances made in self-driving technology, there is still no car that is 100% fully autonomous today. While carmakers such as Tesla and General Motors have developed features such as pedestrian detection, lane departure warnings, traffic sign recognition, and blind-spot detection, fully automated self-driving vehicles likely won't be ready any time before 2030.

Design Technology: Students are taught explicitly about the environmental impacts of timbers, polymers and metals on the environment.

The most up to date a relevant news articles can be used in this scheme of learning to broaden students understanding of pressing issues within our world today.

Assessment timeline:

GCSE computer Science covers a large array of different concepts. Through the AQA Specification these have been broken into 9 different units. Due to natural cross overs in content units have been simplified into 7 Units of work;

Unit 1: Computer Systems
Unit 2: Networks
Unit 3: Ethical, legal and environmental impacts
Unit 4: Fundamentals of data representation
Unit 5: Programming
Unit 6: Programming Project
Unit 7: Fundamentals of algorithms

Throughout subject knowledge delivery formative assessments take place throughout. These formative tests are in the form of class quizzes and are tracked throughout on the student assessment sheet within class folders. At the end of the unit delivery scheme of learning students take a test that amalgamates these tests into one large test. This data is

recorded onto the front of student folders and informs teachers and students of subject knowledge retained. Students will be questioned during plenaries of lessons and will be asked to explain the previous lessons content at the start of the following lesson.

Through the use of Google Forms statistics are provided for teachers to identify specific areas of poor student knowledge retention. This information enables teachers amend teaching practice if required or enable more time to be given in its delivery.

Unit 1: Ethical, legal and environmental impacts	
Ethical Issues	**14 marks**
Environmental Issues	**17 marks**
Open Source & Proprietary Software	**13 marks**
End of Unit Assessment	**44 marks**

Home learning

Seneca is implemented as the home learning platform for AQA Computer Science. Retrieval practice means the repetition of subject content further supports classroom delivery if it happens at calculated intervals. Seneca learning platform does not only increase the students' engagement but has also scientifically proven to let students learn two times faster. Seneca covers AQA Computer Science with exam board specific questions and is written by senior examiners & industry experts. This coupled to student Google Classrooms enables assignments that show you the student's grade, study time and number of attempts.

Feedback

Computer Science uses subject specific front sheets to inform students of their academic achievements. These percentage scores demonstrate student attainment across specification units and enables students to focus on areas of weakness prior to Summative Assessment or MOCK exams.