

Curriculum Knowledge Map



Computing/CS

Year 9	AUTUMN		SPRING (1&2)	SUMMER	
	Cyber Security	Mobile App Development	Computational Thinking & Python Programming Project	IT & The World of Work	Ethical, Legal, Cultural & Environmental
	Component 1 empowers students to become responsible digital citizens with the knowledge, skills, and prevention methods to navigate the digital landscape securely. They will develop critical thinking abilities and gain an understanding of the social, ethical, and moral implications of cybersecurity	Throughout Component 2, students use App Lab to create a text-based adventure game. They learn coding, storytelling, and problem-solving while designing interactive narratives and characters. This fosters creativity, critical thinking, and collaboration, empowering students to bring their ideas to life in a fun and educational way.	Throughout Component 3, students will enhance their computational thinking skills by analysing a project brief, applying abstraction and decomposition to the task. They will then create algorithms that will be utilized as part of their text-based adventure game in Python. Transitioning to Python, they will develop fundamental programming skills and incorporate ASCII art, resulting in a captivating and interactive game. This unit fosters computational thinking, problem-solving, and creative expression, empowering students to become proficient program.	Component 4, which also supports learners' accreditation in the iDEA award, explores the impact of information technologies on the workplace. Learners examine methods used by organizations, effects on stakeholders, and topics such as remote work tools, workforce implications, accessibility, collaboration platforms, and social/ethical impacts.	Throughout this unit, students will engage in thought-provoking discussions, critical thinking activities, and reflective exercises. By the end, students will possess a deeper understanding of environmental, legal, and ethical aspects of technology, empowering them to become responsible digital citizens in an ever-evolving digital landscape.
Declarative <i>What should they know?</i>	<ul style="list-style-type: none"> Understanding the importance of data privacy and security in personal and professional contexts. Knowledge of common social engineering techniques used to manipulate individuals and gain unauthorized access to data. Understanding the concept of script kiddies and their role in cyberattacks. Awareness of the rise of bots and their impact on online activities, such as spamming, hacking, or misinformation. Familiarity with various prevention methods and strategies to protect 	<ul style="list-style-type: none"> When a problem needs to be broken down (decomposition) The concept of 'Event-Driven programming' How user input can be stored within variables Concept of text-based adventure games and their elements: narratives, choices, and outcomes. App Lab interface and tools for creating interactive experiences. Coding concepts: variables, conditionals, loops, and functions. Use of ASCII art for visual elements in text-based games. Game design principles: engaging storytelling, 	<ul style="list-style-type: none"> What is meant by the term algorithms? The three pillars of Computational Thinking – "Abstraction, decomposition, algorithmic thinking" The tools and processes needed to design, Create & Refine Programs Understanding the transition from App Lab to Python, a text-based programming language. Knowledge of coding concepts such as sequence, selection, iteration, random number generation, arrays, sub-programs, and maintainability. Familiarity with utilizing ASCII art to enhance visual elements in a text-based adventure game. Understanding the importance of fundamental programming skills in creating robust and maintainable code. Awareness of the creative potential and opportunities for game development using Python. What Structure Diagrams are and how they can be used to break down problems through decomposition. Programming Fundamentals – What is meant by: 	<ul style="list-style-type: none"> Different types of work practices How flexible working is achieved through 24/7/365 availability. How modern technology facilitates inclusivity and accessibility. The tools available for those with visual and hearing impairments. The value of collaboration within working teams and how tools facilitate inclusivity in the workplace. The principles of good communication practice The difference between the language used with peers online and that with colleagues in order to develop positive online presence. The purpose of cloud computing and the different services 	<ul style="list-style-type: none"> Understanding environmental issues related to technology, such as e-waste, energy consumption, and sustainability. Knowledge of legal issues surrounding technology, including data protection, copyright, and cybersecurity laws. Familiarity with ethical issues in the digital world, such as privacy, online behaviour, and digital rights. Awareness of digital ethics and its importance in making responsible choices and decisions online. Understanding the impact of mobile technology on society, including its benefits and challenges.

Curriculum Knowledge Map



	<p>against data breaches, cyber threats, and unauthorized access.</p>	<p>character development, and user interaction.</p> <ul style="list-style-type: none"> Importance of planning and organizing code for readability and maintainability. How to effectively document their progress relating to their programming project How to effectively review an app and leave constructive feedback to peers. 	<ul style="list-style-type: none"> Variables, constants, operators, inputs, outputs, assignment The different data types available whilst programming: <ul style="list-style-type: none"> Integer Float Boolean String Character 	<p>offered by providers alongside how these benefit of disadvantage businesses.</p> <ul style="list-style-type: none"> The different methods of constructing personal networks, an essential skill in the workforce of remote workers. How to keep personal networks secure of their own personal data and others. The benefits and drawbacks of working remotely on physical and mental well-being. 	<ul style="list-style-type: none"> Knowledge of social media platforms, their features, and their impact on individuals and society. Understanding the documentary "The Social Dilemma" and its exploration of the social impact of technology.
<p>Procedural <i>What should they be able to do?</i></p>	<ul style="list-style-type: none"> Applying privacy and security practices to protect personal and sensitive data. Identifying and recognizing social engineering tactics and implementing measures to mitigate their impact. Understanding the risks posed by script kiddies and employing countermeasures to protect against their activities. Recognizing the presence of bots and implementing preventive measures to mitigate their negative effects. Applying prevention methods, such as using strong passwords, enabling two-factor 	<ul style="list-style-type: none"> Analysing project requirements and translating them into design decisions for the text-based adventure game. Using App Lab to design and develop the interactive narratives, character interactions, and game mechanics. Applying coding skills to implement variables, conditional statements, loops, and functions to create game logic. Incorporating ASCII art and other visual elements to enhance the game's aesthetics and user experience. Testing and debugging the game to identify and fix any errors or issues. Iteratively improving the game by incorporating 	<ul style="list-style-type: none"> Apply decomposition, abstraction, and algorithmic thinking to solve a problem. Recognise scenarios where computational thinking techniques are applied. Analyse and create flowcharts using flowchart symbols. Use an IDE to write and execute a Python program. Applying programming skills in Python to create a text-based adventure game, incorporating sequence, selection, and iteration. Utilizing random number generation to introduce randomness and variability in the game. Implementing arrays to store and manipulate game data, such as character attributes or inventory. Designing and developing sub-programs (functions) to organize and modularize code for improved maintainability. Testing and debugging the game to ensure functionality and fix any issues. Iteratively improving the game by incorporating feedback, refining mechanics, and enhancing the user experience. Demonstrating creative thinking and problem-solving skills while developing the game using Python. 	<ul style="list-style-type: none"> Use modern technology tools that assist inclusivity and accessibility. Recall collaboration and communication platforms Evaluate effective online communication. Formulate a proposal that identifies essential skills for the modern workplace. Judge the security of ad hoc networks. Evaluate the impact of mental well-being on individuals. Evaluate the impact of physical well-being on individuals. Create a positive working environment. analyse well-being issues experienced by others in the wider news from online research. analyse and identify opportunities and risks that may arise from technologies (e.g. VR, AR, AI) that could impact on health and well-being. 	<ul style="list-style-type: none"> Evaluating and discussing environmental implications of technology use and identifying ways to reduce environmental impact. Applying legal principles and regulations to ensure compliance and ethical behaviour in digital activities. Engaging in ethical discussions, considering perspectives, and making informed decisions in digital contexts. Applying digital ethics principles to navigate online environments responsibly and ethically. Analysing the role and impact of mobile technology in daily life and identifying its benefits and potential risks. Exploring social media platforms, their functionality, and guidelines for safe and responsible usage. Reflecting on the themes and messages portrayed in "The Social Dilemma," discussing its impact and implications.

Curriculum Knowledge Map

	authentication, and keeping software up to date, to enhance data security and reduce vulnerabilities.	feedback, refining mechanics, and enhancing the user experience.				
Disciplinary Literacy <i>(Tier 3 Vocab)</i>	<ul style="list-style-type: none"> • Cybersecurity • Network Security • Hackers • Planting the flag • Ethical Hackers • Hacktivists • Social Engineering • Keylogging • Pharming • Phishing • Malware • Trojan • Zombie • Data Breach/Data interception • Brute Force Attack • DoS • DDoS • SQL injection • Virus • Worm • Ransomware • Spyware • Adware • Exploit • Encryption • Firewall • Antivirus • White/Grey/Black box/hat 	<ul style="list-style-type: none"> • Decomposition • Mobile • App (application) • Properties • Event-driven programming • Variables • Sequence • Workspace • Ids • Parameters • Sequence • Object properties • Object ids • Errors • Event handler • Input • checkbox 	<ul style="list-style-type: none"> • Computational Thinking • Abstraction • Decomposition • Algorithms • Flowchart • Pseudocode • Input/Output • Process • Decision • Terminal • Sub-Program • Variables • Constants • Operators (arithmetic/comparison) • Assignment • Sequence • Selection • Iteration 	<ul style="list-style-type: none"> • AND/OR/NOT • Data Types • Integer • Real • Boolean • Character • Casting • Syntax • Logic • High Level Languages • Low level Languages • Translators • Compilers • Interpreters • IDE • Editors • Error diagnostic • Run-time environment 	<ul style="list-style-type: none"> • Stakeholders (anyone involved with an organisation, from the CEO to customers) • organisations (any business, charity, provider etc.) • accessibility • inclusivity • Collaboration • Communication • Netiquette • Infrastructure • local software • online software • device • processing power • RAM • Ad hoc network • PAN (personal area network) • Remote working • Ergonomics • mental and physical health 	<ul style="list-style-type: none"> • E-waste • Sustainability • Energy consumption • Digital footprint • Data protection • Copyright • Cybersecurity • Compliance • Privacy • Online behaviour • Digital rights • Ethical dilemmas • Digital Ethics • Responsible choices • Ethical decision-making • Multiple perspectives • Ethical implications • Mobile Technology: • Impact • Benefits • Challenges • Responsible use • Social Media: • Platforms • Functionality • Guidelines • Impact • Social implications • Technology impact • Analysis
Assessment	<ol style="list-style-type: none"> 1. Lesson 4: Cyberthreat Report (Class Notebook) 2. End of Component Assessment (MS Forms) 	<ol style="list-style-type: none"> 1. Lesson 10: App Storyboard and Structure Diagram – Teams Assignment 	<ol style="list-style-type: none"> 4. Lesson 16: Flowchart production 5. Text-Based Adventure game Digital Portfolio (attached rubric) 	<ol style="list-style-type: none"> 6. End of unit summative assessment - The summative assessment for this unit will be 	<ol style="list-style-type: none"> 7. End of unit summative assessment - The summative assessment for this unit will be 	

Curriculum Knowledge Map



		<p>2. App Development Portfolio (attached Rubric) will assess students' ability at producing success criteria, screen designs, decomposition & app development.</p> <p>3. End of Component Assessment (MS Forms)</p>		<p>in the form of a set of multiple-choice questions MSF.</p>	<p>in the form of a set of multiple-choice questions MSF.</p>
<p>National Curriculum Links</p>	<ul style="list-style-type: none"> Develop their capability, creativity, and knowledge in computer science, digital media, and information technology. Understand how changes in technology affect safety, including new ways to protect their online privacy and identity, and how to report a range of concerns. 	<ul style="list-style-type: none"> Design, use, and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems. Use two or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables, or arrays]; design and develop modular programs that use procedures or functions. Understand several key algorithms that reflect computational thinking; use logical reasoning to compare the utility of alternative algorithms for the same problem. Create, reuse, revise, and repurpose digital artefacts for a given audience, with attention to trustworthiness, design, and usability. 		<ul style="list-style-type: none"> Understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct, and know how to report concerns. Develop their capability, creativity, and knowledge in... Information technology 	<ul style="list-style-type: none"> Undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users. Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems

