

Resedule COMPUTING: OPTION

Year 9

What are the aims and intentions of this curriculum?

The aim of our Key Stage 3 Curriculum is to ensure students experience a broad and balanced experience in Computing, which prepares them effectively for the workplace and as active participants in the digital world. The curriculum offers a balanced approach which will equip students to use computational thinking, principles of information, how digital systems work and how to put this knowledge to use through programming, the creation of systems and a range of content. This curriculum also ensures that students can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems and ultimately are responsible, digitally literate, confident and creative users of information and communication technology. The national curriculum for computing aims to ensure that all students can understand and apply the fundamental principles and concepts of computer science, including logic, algorithms and data representation. It also covers e-safety, with progression in the content to reflect the different and escalating risks that young people face as they get older. This includes how to use technology safely, responsibly, respectfully and securely, how to keep personal information private, and where to go for help and support.

Term	Topics	Knowledge and key terms	Skills developed	Assessment
Autumn 1	Virtual Reality Augmented Reality VR/AR	National Curriculum: Students 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. Students create, re-use, revise and re- purpose digital artefacts for a given audience, with attention to trustworthiness, design and usability.	 Spatial Awareness and Visualisation: This technology helps develop spatial awareness and visualisation skills as users need to understand how virtual objects relate to the physical environment Problem-Solving and Critical Thinking: Evaluate possible solutions, and think critically to find the most effective way to achieve their goals within the augmented environment. Collaboration and Communication: Collaborate on tasks, solve problems together, and communicate their ideas within the augmented environment. Digital Literacy and Technological Proficiency: Understand interfaces, interact with virtual elements using gestures or voice commands, and navigate through the augmented environment. Content Engagement and Retention: 	VR Elephants Task.

	Explore and interact with virtual models, animations, or simulations, which helps them grasp complex concepts more effectively and retain knowledge for longer periods.	
	Adaptability and Flexibility:	
	Be flexible in their approach to using augmented reality and be open to exploring different possibilities and ways of interacting with virtual objects.	
	Empathy and Cultural Understanding:	
	Explore different places, historical events, or cultural artifacts, fostering empathy and cultural understanding. This helps develop a global mindset and promotes intercultural competence.	
	PSHE Links – Students learn the legal rights and responsibilities regarding equality (particularly with reference to the protected characteristics as defined in the Equality Act 2010) and that everyone is unique and equal.	
	Students learn about online risks, including that any material someone provides to another has the potential to be shared online and the difficulty of removing potentially compromising material placed online.	
	Students know the importance of not to provide material to others that they would not want shared further and not to share personal material which is sent to them.	
	Students learn more about Setting goals. Learning strengths, career options and goal setting as part of the GCSE options process.	
	British Values: Individual Liberty People are responsible for advances in science and technology. Students recognise that it is important that risks are managed and the consequences considered carefully so that these advance our society.	
	Careers Links – Programmer, Software Engineer Robotics Engineer	

		Career Specific Skills: Use AR to visualise and present 3D models of their designs, medical students can practice virtual surgeries, and engineering students can simulate and analyse structures in augmented environments.	
Autumn 2 Virtual Reality Augmented Reality VR/AR Continued	National Curriculum: Students 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. Students create, re-use, revise and re- purpose digital artefacts for a given audience, with attention to trustworthiness, design and usability.	 Spatial Awareness and Visualisation: This technology helps develop spatial awareness and visualisation skills as users need to understand how virtual objects relate to the physical environment Problem-Solving and Critical Thinking: Evaluate possible solutions, and think critically to find the most effective way to achieve their goals within the augmented environment. Collaboration and Communication: Collaborate on tasks, solve problems together, and communicate their ideas within the augmented environment. Digital Literacy and Technological Proficiency: Understand interfaces, interact with virtual elements using gestures or voice commands, and navigate through the augmented environment. Content Engagement and Retention: Explore and interact with virtual models, animations, or simulations, which helps them grasp complex concepts more effectively and retain knowledge for longer periods. Adaptability and Flexibility: Be flexible in their approach to using augmented reality and be open to exploring different possibilities and ways of interacting with virtual objects. Empathy and Cultural Understanding: 	VR Map Task.

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			Students learn more about Setting goals. Learning strengths, career options and goal setting as part of the GCSE options process	
			British Values: Democracy Students recognise that they can use their voices to share their thoughts and impact the future.	
			Careers Links – Programmer, Software Engineer Robotics Engineer	
			Use AR to visualise and present 3D models of their designs, medical students can practice virtual surgeries, and engineering students can simulate and analyse structures in augmented environments.	
Spring 1	Project Planning Tools	Students design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems.	 Students learn how to use and apply a range of planning and designing solutions including: User requirements Purpose Target audience Content 	Al Mindmaps, Flow diagrams and Flowcharts Information Flow Diagrams Wireframes

			 functionality navigation system outputs from the system. the use of story boards, visualisation diagrams and wireframes as design tools for representing the solution. Location (GPS) based/markerless Superimposition Layers/user interaction PSHE links - Students learn more about Setting goals. Learning	Structure of write-up
			strengths, career options and goal setting as part of the GCSE options process. British Values: Mutual Respect and Tolerance Students recognise they have the power to influence so should consider how their behaviour, actions and words can affect others. Careers Links – Programmer, Software Engineer, Business Analyst, Project Manager	
Spring 2	Spreadsheets	Students 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. Students create, re-use, revise and re- purpose digital artefacts for a given audience, with attention to trustworthiness, design and usability.	 Students can create a spreadsheet solution that: explores the manipulation of data using simple formulas make us of operators (+,-,*,/) and parenthesis introduce the use of cell formatting. uses meaningful worksheet names in a workbook uses named cells/group of cells uses cell references (relative, absolute, named, multi-sheet referencing). uses built in functions including SUM, MIN, MAX, AVERAGE, COUNT, IF, COUNTIF, LOOKUP, VLOOKUP, HLOOKUP, AND, OR, DATE, TODAY, SUMIF, SUBTOTAL. uses relational operators including =, <, >, <=, >=, <> can solve formula errors (#DIV/0, #NAME?, #REF! etc). uses filters. 	Spreadsheet Modelling Task.

			 uses range checks restricts text length uses lookup techniques 	
			 uses limited choice options such as drop down lists radio buttons incorporates tick lists. 	
			PSHE Links – Students learn the characteristics of positive and healthy friendships (in all contexts, including online) including: trust, respect, honesty, kindness, generosity, boundaries, privacy, consent	
			Students learn more about Financial Decision Making and the calculation of income in different scenarios.	
			Students recognise that they can use their voices to share their thoughts and impact the future.	
			Career Links - Data Manager, Accountants, Banking, Statistician, Market Makers (Stock Brokers).	
Summer 1	Spreadsheets	Students 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. Students create, re-use, revise and re- purpose digital artefacts for a given audience, with attention to trustworthiness, design and usability.	 Students can create a spreadsheet solution that: explores the manipulation of data using simple formulas make us of operators (+,-,*,/) and parenthesis introduce the use of cell formatting. uses meaningful worksheet names in a workbook uses named cells/group of cells uses cell references (relative, absolute, named, multi-sheet referencing). uses built in functions including SUM, MIN, MAX, AVERAGE, COUNT, IF, COUNTIF, LOOKUP, VLOOKUP, HLOOKUP, AND, OR, DATE, TODAY, SUMIF, SUBTOTAL. uses relational operators including =, <, >, <=, >=, <> can solve formula errors (#DIV/0 #NAME2 #REEL etc) 	Spreadsheet Modelling Task Assignment Exemplar.

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