

ICT Department

Year: 9 Term 1a

Topic: **Unit 13- Hardware and Software**
Learning Journey

Prior learning: Students will have been introduced to different components of a computer in unit 5-Inside a computer, but will not have the opportunity to understand how the CPU processes data using the Fetch-Decode-Execute cycle. Students would have been introduced to image, sound and files types in unit 12 and the impact on storage, in this unit they will look at other file types.

Learning sequence –							Endpoint
Main learning steps	Students will recap on their understanding of devices attached to a computer system. Students will recap on how data is input, processed and output in a computer system using input/output/ storage devices.	Students will look at the components inside a computer and identify the CPU, motherboard, RAM, fan, heat sink, fan, PSU, hard disk drive, sound card. Students will explain the function of each component and compare the difference in performance of processor, memory and storage types.	Whole class feedback- Bronze assessment Students will recap on the function of the CPU. Students will then be introduced to the fetch-decode-execute cycle. Students will be shown how the cycle works to process data input by a user.	Students will investigate different file types and their impact on storage size.	Students will be shown examples of different operating system and how they have changed over time. Students will be shown examples of application software and why these are different to operating systems and how both work together in a computer system.	Whole class feedback- Silver assessment Students will create a Sway presentation for year 7 students on computer hardware and software	Students will be able to name the peripheral devices attached to a computer and recognize whether they are an input, output or process device. Students will be able to name and understand the functions of components inside a computer Students will know how the CPU processes data using the Fetch-decode- Execute cycle. Students will know different files types and their impact on the device's storage capabilities. Students will understand the difference between an operating system and application software.
Assessment		Bronze- Multiple choice			Silver- Multiple choice	Gold assessment	

Where will we use these ideas again: Students will look at the CPU more closely in unit 19 and investigate further how data is processed? Students will also look at how computer systems work in products that are used in every life (Embedded systems) in Unit 20- Internet of Things.

ICT Department

Year: 9 Term 1b

Topic: **Unit 14- Understanding Business Studies**

Learning Journey

Prior learning: Students may have looked at some key terms in subjects such as geography, maths or PSHE where concepts of saving/ spending, international trade, exchange rates may have been taught. Students may also be able to use some personal experiences to complete tasks such as needs and wants.

<i>Learning sequence –</i>							<i>Endpoint</i>
Main learning steps	Students will be introduced to the basic economic problem of scarcity and the need to make choices. Students will be shown the difference between needs and wants and how they might change over time.	Students will identify the difference between saving and spending money. Students will be shown why individuals might borrow money Students will look at different ways to invest money and why this might be a better alternative to saving money.	Whole class feedback- Bronze assessment Students will be introduced to international trade and key terms such as imports and exports. Students will explain the advantages and disadvantages of international trade. Students will research goods imported to and exported from the UK	Students will calculate exchange rates of given problems. Students will look at the reason behind exchanging currencies when going abroad.	Students will investigate the role of the government and look at the roles of those who sit in parliament.	Whole class feedback- Silver assessment Students will work in groups to solve a given problem e.g. looking at an individual's budget and making the right choices. Groups will present their findings to the class using appropriate presentation software.	Students will be able to understand the basic economics problem and understand the difference between needs and wants. Students will be able to explain the difference between spending, saving, investing and borrowing money. Students will be able to name goods imported to and exported from the UK. Students will be able to calculate exchange rates Students will understand the role of the government
Assessment		Bronze test: Multiple-choice			Silver test: Multiple-choice	Gold assessment.	

Where will we use these ideas again:

ICT Department

Year: 9 Term 2a

Topic: **Unit 15- Python Programming**
Learning Journey

Prior learning: Students were introduced to flowcharts and pseudocode and how to construct them in unit 3- Computational Thinking. Students were introduced to Python programming in unit 8- Introduction to Python where they have learnt about sequencing and selection. Computational thinking was introduced in unit 3 and recapped in unit 8.

Learning sequence –							Endpoint
Main learning steps	Students will recap on the four corner stones of computational thinking: Algorithm, Decomposition, abstraction, pattern recognition. Students will recap on how to create flowcharts and write pseudo-code	Students will revise their understanding of Python programing looking at basic sequencing and selection. Students will recap on data types used in Python	Students will be introduced to Variables and their purpose in a program Students will write a program using variables	Whole class feedback- Bronze assessment Students will be shown how to write a program which includes variables and selection. Students will write a program using variables and selection	Students will be introduced to loops in Python. Different types of iteration will be introduced by comparing them to loops in Scratch. Students will write a program using iteration.	Whole class feedback- Silver assessment Students will design and create a solution using Python for a given gaming problem.	Students will be able to plan a program using pseudo-code or flow charts. Students will be able to create a Python program using Variables, Selection, Iteration Students will be able to create a program to solve a problem
Assessment			Bronze test: Multiple-choice		Silver test: Multiple-choice	Gold assessment- Solving a computational problem using Python	

Where will we use these ideas again: Students will need flowchart, pseudo-code and Python programming skills in unit 16, when they learn about Boolean logic and searching and sorting algorithms.

ICT Department

Year: 9 Term 2b

Topic: **Unit 16 –Artificial Intelligence and Robotics**
Learning Journey

Prior learning: Students will use their skills of programming in Scratch to direct a robot to complete a rescue mission

Learning sequence –						Endpoint
Main learning steps	<p>Students will learn what artificial intelligence is</p> <p>Students will look at various examples of how artificial intelligence has been used in the the real world such as the medical field</p> <p>Students will be able to discuss the impact these AI technologies have had on society</p>	<p>Students will investigate further AI technology and be able to explain the positive and negative impact this has had</p> <p>Students will be able to discuss the possibilities of bias when relying on AI technologies and investigate ways in which such bias can be avoided.</p>	<p>Whole class feedback: Bronze assessment</p> <p>Students will learn about the use of robotics to help with rescue missions such as natural disasters</p> <p>Students will be able to explain the impact of these robots on society</p>	<p>Students will be able to use their programming skills to instruct robots in rescue missions.</p>	<p>Whole class feedback- Silver assessment</p> <p>Students can analyse the consequences of using AI and robots in society, with a focus on social, environmental, ethical and legal impact.</p>	<p>Students will understand the terms machine learning and artificial intelligence.</p> <p>Students will be able to identify the reasons behind the growth in machine learning and artificial intelligence.</p> <p>Students will be able to identify the impact robots and AI has had on society.</p> <p>Students will be able to create their own program to control a robot</p> <p>Students will be able to explain the benefits, drawbacks and ethical issues of AI and robotics.</p>

Assessment		Bronze test: Multiple-choice		Silver test: Multiple choice	Gold assessment		
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Where will we use these ideas again: *If students go on to study GCSE Computer Science, they will further learn how technology has impacted on society, specifically looking at the social, environmental, ethical and legal impact*