

Co-op Academy North Manchester - Year 8 Business & Computing Curriculum

Year 8	HT1	HT2	HT3	HT4	HT5	HT6
Topic(s)	Cyber security	Algorithms	App development	Programming (Introduction to Python)	Data representation	Artificial Intelligence
Substantive Knowledge (Know That...)	<ul style="list-style-type: none"> • Know that criminals can use a variety of methods to access and retrieve personal information. • Know that email can be used as a scamming tool to obtain personal and financial information. • Know that there are legal consequences for cyber criminals. • Know that cyberbullying can have an impact on mental and physical health. • Know that there are consequences for youth produced sexual imagery • Know that there is support available should anyone be affected by cyber crime (including cyber bullying). • Know that there are signs of online grooming that can be spotted to prevent escalation of danger and to bring perpetrators to justice. 	<ul style="list-style-type: none"> • Know that an algorithm is a set of instructions followed to complete a task • Know that a flowchart can be used as an algorithm to resolve a computing problem • Know that abstraction is the removal of unnecessary data when programming. • Know that sequencing is important for the planning of an algorithm. • Know that computer programs may have a series of loops (iteration). • Know that a computer program may need to use selection in order to perform one of a group of tasks based on a decision by the user. • Know that pseudocode can be used to bridge a gap between flowcharts and a programming language when developing 	<ul style="list-style-type: none"> • Know that apps can be created either visually or using a programming language. • Know that apps should have a consistent house style. • Know that audience needs should be considered when developing an app. • Know that programmers must work collaboratively when creating apps. 	<ul style="list-style-type: none"> • Know that there are different data types • Know that computer programs use variables • Know that computer programs use LOOPS • Know how to create loops in a program • Know that Python is one of many programming languages • Know that other algorithm tools are used to plan a computer program before coding takes place 	<ul style="list-style-type: none"> • Know that images, sound, and text characters can be represented in binary. • Know that different data types can be used for storage. • Know that binary numbers (8-bit) can be added together. • Know that binary numbers can be converted into denary and hexadecimal. • Know that unicode and ASCII can be used to represent characters. • Know that different image types can be used depending on the purpose of the image being stored/edited. 	<ul style="list-style-type: none"> • Know that AI is technology that enables a computer to think or act in a more 'human' way. It does this by taking in information from its surroundings, and deciding its response based on what it learns or senses. • Know that there are advantages and disadvantages of using AI. • Know that there are tests we can do in order for us to class an AI as having general intelligence • Know that AI chatbots have advantages and disadvantages. • Know that there are potential issues surrounding AI in terms of bias and accuracy.

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<p>Disciplinary Knowledge (Know How...)</p>	<ul style="list-style-type: none"> • To know how to identify the signs of phishing emails. • To know how criminals operate to retrieve personal and financial information online, and using technology. • To know how to identify the signs of cyberbullying. • To know how to identify the signs of online grooming. • To know how to seek support when affected by cyberbullying and online grooming. • To know how to offer support to others who may be affected by cyberbullying and online grooming. • To know how to prevent situations of potential grooming becoming a danger to life. 	<ul style="list-style-type: none"> • Know how to construct a set of specific instructions to meet a given goal • Know how flowcharts are constructed using the correct symbols to represent an action or process • Know how to follow the sequence of an algorithm so that steps are logical • How how to represent a loop within a structure diagram • Know how to identify a loop (iteration) • Know how to represent selection on a structure diagram • Know how to convert a flowchart into pseudocode • Know how to write lines of pseudocode to solve a given problem 	<ul style="list-style-type: none"> • Know how to use visual programming to create an app. • Know how to use code to develop an app. • Know how to select appropriate fonts to meet the needs of an audience. • Know how to select appropriate images to meet the purpose of an app. • Know how to design an appropriate house style for an app. • Know how to evaluate the appropriateness of an app and its features in meeting the requirements of a brief. 	<ul style="list-style-type: none"> • Know how to read and understand an existing Python program • Know how the int(), float() and str() functions to convert data types • Know how to write an if-else statement • Know how to create variables • Know how to create conditions in a program (IF statements) • Know how to create loops in a program • Know how to create input and output statements in a program • Know how errors can occur during coding. • Know how to identify a logic and what a syntax error is. • Know how to identify and fix errors in their code 	<ul style="list-style-type: none"> • Know how to select an appropriate file size for a given project. • Know how to convert denary numbers into binary and vice versa. • Know how to carry out binary addition. • Know how to convert binary numbers into hexadecimal. • Know how to decode messages using unicode and ASCII. • Know how sound is captured and saved. • Know how images are represented in binary. • Know how to convert files into different formats. • Know how and why different file formats are used so that images can be used for different purposes. 	<ul style="list-style-type: none"> • Know how AI can speed up tasks. • Know how chatbots generate answers for humans' questions. • Know how AI can analyse data and images • Know how AI can show bias. • Know how to produce an AI chatbot using scratch • Know how to appropriately use AI to its full potential avoiding bias and ensuring accuracy.
<p>Key Concepts</p>	<p>How to stay safe online and when using a computer. The dangers of social media and the protection of personal information.</p>	<p>How algorithms are used to deconstruct a problem and how they are designed so that a computer program can be written to solve the algorithm.</p>	<p>App design, house-style, layout, target audience, and testing.</p>	<p>Algorithm design, syntax, errors, functions, variables.</p>	<p>Data representation, storage, and conversion. Addition and conversion of binary.</p>	<p>The use of artificial intelligence and its impact on society.</p>
<p>Assessment</p>	<p>Questioning, activity responses, end of topic test.</p>	<p>Questioning, activity responses, end of topic test.</p>	<p>Completed app, planning and review documents.</p>	<p>Completed program, in class testing and review, knowledge quizzes.</p>	<p>Questioning, activity responses, end of topic test.</p>	<p>Questioning, activity responses, end of topic test.</p>

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Homework	Research tasks and knowledge quizzes.	Research tasks and knowledge quizzes.	To research climate change and app design.	Research tasks and knowledge quizzes.	Pre-reading, decoding of messages, and binary conversion.	Research tasks and knowledge quizzes.
Wider reading	https://www.bbc.co.uk/bitesize/guides/zrtrd2p/revision/1 https://www.bbc.co.uk/bitesize/guides/zbxkqt/revision/1	https://www.bbc.co.uk/bitesize/guides/z3bq7ty/revision/1 https://www.bbc.co.uk/bitesize/guides/zgr2mp3/revision/1	https://www.bbc.co.uk/bitesize/levels/z4kw2hy Computer Science and ICT sections.	https://www.bbc.co.uk/bitesize/levels/z4kw2hy Computer Science and ICT sections.	https://www.bbc.co.uk/bitesize/guides/z26rcdm/revision/1 https://www.bbc.co.uk/bitesize/guides/zpfdwmn/revision/1	https://experience-ai.org/en/units/experience-ai-lessons
How to help at home	Discussion of topics being covered, support with knowledge quizzes and accessing revision materials for these. All work and homework can be accessed through Google Classroom.					