

YEAR 8 and Year 9 Python. Computer Science (Creative Industries) Taught in the first section of the year 8 rotation and also in Term 1 of Year 9 for 2023 to 2024

(In 2024 to 2025, Year 9 will have a more difficult python unit in this slot but they need to have a better grasp of Python at a higher level for this year)

Rationale and Context of Unit:	Core curriculum content:	Tier 2 & Tier 3 vocabulary explicitly taught:
<p>Thus far, students have covered basic computer skills, coding skills (pseudo code) and have looked at how computers operate as well as hardware and networks. This python is a better unit than the one taught last year and teaches skills at a higher level. During this academic year student in both year 8 and 9 will upskill their coding knowledge using this unit. The following year a second part to this unit will be slotted into the year 9 section which bridges the gap between this unit and the GCSE course. Year 9s this year will be set extension tasks and HMKs centring on python so they can build on this knowledge.</p> <p>In Key Stage 3 students must:</p> <ul style="list-style-type: none"> understand several key algorithms that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem 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 	<p>Students are taught:</p> <p>This unit introduces learners to text-based programming with Python. The lessons form a journey that starts with simple programs involving input and output, and gradually moves on through arithmetic operations, randomness, selection, and iteration. Emphasis is placed on tackling common misconceptions and elucidating the mechanics of program execution.</p> <p>A range of pedagogical tools is employed throughout the unit, with the most prominent being pair programming, live coding, and worked examples.</p> <p>This knowledge will need to be applied if a student takes the KS4 Computer Science course.</p> <p>If a student is interested in a career in coding or programming, this unit will further their understanding and knowledge.</p>	<p>Boolean (3) Iteration (2)</p> <p><i>NB. Each lesson has a key words list to accompany the students' learning and more words may be explicitly taught than the above but these are obligatory.</i></p>

procedures or functions

- understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming; understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers [for example, binary addition, and conversion between binary and decimal]

We cover the above points in this unit.

Challenge and Support:	World wide learning/ links to 21st century:	Cultural capital/ Industry/ Enrichment:
<p>Each lesson has EDSM descriptors and there are tasks in each lesson which target HAPs.</p> <p>This scheme gives students the opportunity to make links about how a computer ‘really thinks’ and how this links to the operating system. There are extension tasks for HPAs throughout the unit.</p> <p>Students will be taught how to change the colours of documents. A list of key words/ word bank is available for every lesson with definitions.</p> <p>Tasks are chunked with step by step instructions and the lessons powerpoints are saved on our google classrooms. Students who need to, can save a copy to their areas so they can refer back to it. They can print the document if needed and make notes (or do this electronically).</p> <p>Extra help guides are also available in both electronic and printed out formats for various pieces of software.</p> <p>Writing frames / bullet points to support learners with extended writing tasks.</p> <p>Students are given plenty of time (at least a week) to complete any homework tasks. They are encouraged to complete this at lunchtime or at homework club, giving them access to computers, if they do not have IT access at home.</p>	<p>Each lesson has either a ‘real life link’ or a ‘link to careers’ section and the start of the unit is put into context with other units and what students have learned previously.</p> <p>IT is a huge industry now and many student want to go into ‘games design’ without realising how much coding is involved and the knowledge required for these roles. We talk about jobs roles with coding during this unit.</p>	<p>Students have an opportunity to look at a text based type of coding which targets any budding computer programmers / coders.</p> <p>Careers link on each lesson provides a prompt for students to go and research a particular career. We will also have discussions in class around these areas.</p>

<p>Lessons will be further scaffolded in accordance with SEND and PP passports. Seating plans will be annotated based on passports.</p> <p>To support SEND students further, scaffolding, cognitive and metacognitive strategies, explicit Instruction, memory retrieval techniques and flexible grouping are used, along with the aid of technology.</p>		
Historical, Social, Moral, Spiritual, Cultural context:	Cross curricular links/ literacy/numeracy:	Common misconceptions:
<p>Some lesson links to decision making in computing which can link to the moral context of AI.</p>	<p>Links to maths and numeracy as we use python to program several maths games.</p> <p>Opportunities to read out aloud in class (or to each other) from information on lesson powerpoints.</p> <p>Lots of numeracy involved and 'logical thinking'.</p>	<p>'It's boring' 'Coding isn't creative' 'It's a skill for smart people'</p> <p>This unit aims to explain that at the heart of programming is problem solving and creativity, that you just need to be a logical thinker and actually that lots of coders copy and paste the required code!</p>
Assessment timeline:		
<ul style="list-style-type: none"> • Skills will be assessed on a lesson by lesson basis using AB tutor to monitor students' progress with the development of their computer science skills. • Recap / memory exercises at start and end of each lesson. • All lessons show examples of what students are aiming for (where applicable) • EDSM criteria included in all lessons so students can self-assess each lesson • Assessment quiz at the end of the unit. 		

Home learning

HMK task overlearning about printing text (lesson 2)
 HMK task overlearning about using python for maths problems (lesson 4)
 HMK: revision (lesson 5)

Further reading / watching:

- <https://replit.com/new/python3> (Students have accounts on replit. Lots of extension work they can do on self-guided tutorials)

Feedback

Self-marking assessment quiz on google forms
 Whole class feedback on HMK
 Class discussions used regularly. Online Quizzes

Length of unit (duration indicated in lessons)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Unit: Python (First section of first rotation in Year 8 and first unit (term 1) of year 9)* <i>*Due to change next academic year</i>																													