



CURIOSITY

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Recovery curriculum outline 2022-23

		Computing
		Term 6 Jun-Jul
Year 7:	Networks Oak academy lessons 1-6	
Year 8:	Media - vector graphics Oak academy lessons 1-5	
Year 9:	Media - vector graphics Oak academy lessons 1-5	
Year 10: GCSE	P1 - Programming: Working with data Oak academy lessons 3-6 P2 - Computing issues Oak academy lessons 1-7	
Year 10: BTEC IT	Comp 2: LAA Investigating use of data Mr Aliz Class - LAA	



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Curriculum overview

Subject	Computing	Year group	10
<p>Vision statement:</p>	<p>At Landau Forte our curriculum exists to ensure all students regardless of background and ability have the opportunity to unlock their potential. We are committed to students being challenged from their previous key stage learning experiences. Our broad and balanced curriculum is ambitious, coherently planned and sequenced, and will provide the platform for preparing students with the foundations for examination success.</p> <p>Our Curriculum Intent has been informed by a wide variety of researchers and is steeped in evidence based research. Christine Counsell summarises the aspiration of our curriculum to empower all learners creating a pathway to success in university, their career and life:</p> <p><i>‘A curriculum exists to change the pupil, to give the pupil new power. One acid test for a curriculum is whether it enables even lower attaining or disadvantaged pupils to clamber into the discourse and practices of educated people, so that they gain powers of the powerful.’</i></p> <p>As well as excellent academic success we aim to ensure our students leave us as polite and well-rounded young adults. Our new core values of Compassion, Courage and Curiosity are currently being embedded throughout our curriculum offer to ensure we continue to meet our social, emotional, spiritual and moral obligations.</p>		
<p>Curriculum intent:</p>	<p>Computing will be central to everything students do in their future lives. This subject gives students the opportunity to utilise technology to enhance the way they live and work. It will also be used as a lens to develop their understanding of the world around them.</p> <p><i>In essence, computing should be seen as an underpinning subject that facilitates new learning and thinking in all other areas. The computer should be a tool that pupils use in the same way as a calculator or a pen.</i></p> <p>As outlined within the National Curriculum: “A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science and design and technology, and provides insights into both natural and artificial systems.”</p> <p>The core of computing is computer science, in which students are taught the principles of information and computation, how digital systems work and how to put this knowledge to use through programming.</p> <p>Building on this knowledge and understanding, students are equipped to use information technology to create programs, systems and a range of content.</p> <p>Computing also ensures that students become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world. The need to use technology with care and compassion should be considered throughout all lessons.</p>		



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Threshold Concepts (TCs):

1. The sequence operation is the default operation of all parts of the computer
2. For a computer to make decision we have to program all of the outcomes that we want
3. Loops are for the programmer's benefit
4. Data can be organised into collections that helps us program
5. Subroutines are used to break our thinking making a solution to a problem easier to find
6. Testing is a crucial part of our designing
7. A computer system is the combination of all its parts working together to carry out a job
8. Binary represents anything we want
9. Communication needs rules to work
10. Computers can be made to stop working simply by slowing them down
11. Websites are often just databases
12. Use of computers magnifies issues that humans face every day

KS2 National Curriculum summary:

A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

Pupils should be taught to:

- design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
- understand computer networks, including the internet; how they can provide multiple services, such as the World Wide Web, and the opportunities they offer for communication and collaboration
- use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
- select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information
- use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

Learner skills:



CRITICAL THINKING



ORACY



COLLABORATION



SELF QUIZZING



ADAPTABILITY



ORGANISATION



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Term 6 Jun-Jul

The Big Question

Big picture questions:

How can we structure what we have to find solutions?

Content (Linked to TCs):

TC6

- How to apply all programming principles to create programmed solutions to problems
- How to read/write from/to a text file
- How string handling operations can be used to manipulate string data
- How to select suitable test data that covers normal (typical), boundary (extreme) and erroneous data
- What test data to use when testing a program

Vocabulary Instruction:

Test data, normal (typical), boundary (extreme) , erroneous, length, position, substring, concatenation, character code, text file

Assessment:

Trial assessment

Key/Historical misconceptions in this unit:

Strings can be changed directly.

When testing, we always need to test for every possible value.



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Term 6 Jun-Jul

The Big Question

Big picture questions:

How can the operation of computers affect humans?

Content (Linked to TCs):

- TC12
- The current ethical, legal and environmental impacts of digital technology on society
 - The current ethical, legal and environmental risks of digital technology on society
 - What data privacy issues arise from the use of digital technology
 - How to balance an arguments for and against the applications of digital technology

Vocabulary Instruction:

Ethical, legal, environmental, data privacy, cyber security, mobile technologies, wireless networking, cloud storage, hacking, wearable technologies, computer based implants, autonomous vehicles, citizens, privacy

Assessment:

Trial assessment

Key/Historical misconceptions in this unit:

Use of technology solves problems that humans have and doesn't contribute to them.

Sequencing:

We have chosen to sequence the year 10 curriculum like this because...

The year is split between learning about computer programming and how computers work. This is done so that the programming element is practised with appropriate spacing to aid reinforcement of concepts and development of more holistic skills.

Programming wise, there is a natural progression in skills firstly starting with basic sequential programs and then developing selection and then iteration based programs. As the term progresses, these core concepts are applied to other fundamental construct again to aid retrieval practise over time. The year culminates in the application of all these concepts to more stretching goals.



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	<p>On the theory side, the model of a computer is built from what learners already know. We explore how a computer system is built from common components and how they interact is explored in detail. This allows more abstract concepts in the year to be explored from a common frame of reference and without this the learning would be more difficult to grasp. The year ends by considering the wider implications of technology and a chance to develop deeper thinking about the subject.</p>
<p>National Curriculum plus:</p>	<p>In addition to teaching the statutory elements of the national curriculum, we also include...(with justification to local context)</p> <p>Programming is a big draw for students and there is an extended focus on trying to solve more than trivial problems. Many electing to do the subject see a benefit of learning how to program and it is important that they appreciate how their core skills are still applicable to even the most complex problems that can be solved. Whilst there is no formal requirement for this we consider this to be an important part of the learners' development in the subject.</p>