COMPUTER SCIENCE DEPARTMENT HANDBOOK

ROCKWOOD
ACADEMY

Department Vision:

Our vision is for students to develop a love of technology and acquire the knowledge and skills they need to access the ever-changing world of technology. We aim to develop computational thinking and problem solving to ensure our students are industry ready professionals to meet the challenges of the 21st century and create well-rounded and critically thinking individuals.

As well as this, students should gain essential IT skills such as word processing and presenting so that they are able to access further education and employment opportunities. These skills will be in demand in many non-technical fields and so it is essential the students have an opportunity to practice them.

Throughout the curriculum there is also an emphasis on responsibility and safety, to ensure that students are familiar with the risks and issues that surround the online world. Students should be aware of the type of behaviour that is expected from them when interacting online to become more responsible internet citizens.

As the world of work becomes increasingly automated, and computers take more of a place in our everyday lives, it is imperative that we equip the society of tomorrow with the skills and awareness to live and be comfortable with computers and technology.

With an education in Computer Science, this is possible.

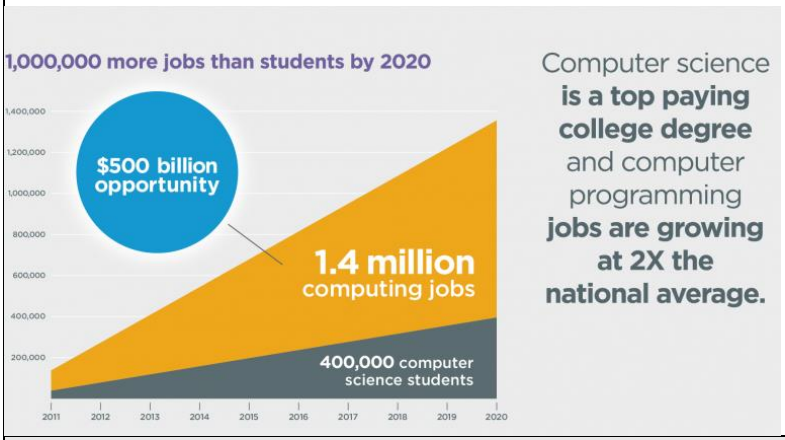
We believe everyone should have access to the widest range of educational opportunities necessary to become creative, empowered, capable and safe citizens, fully participating in and contributing to society and the economy.

We support the teaching of rigorous and relevant computer science across the academic spectrum, from primary school to university, and act as an advocate for the importance of computing as an academic subject and a vocation, support the teaching of computing from primary school to university, and support the thriving digital apprenticeship sector.

- BCS, The Chartered Institute for IT

Every child in every school has the right to a world-class computing education. An understanding of computing enables citizens to make informed choices in our digital world. To get to that point, we need to encourage and equip school staff.

- CAS, Computing At Schools



CORE values:

Collaboration

Students will collaborate with each other and gain an appreciation for working as a group, both in lesson and as part of their enrichment. Being able to work as a team is an important skill in any subject and students will collaborate in pairs or groups for certain tasks, or even as a whole class when discussing topics together.

They will be encouraged to work with a variety of people to foster an open mind and respect the views and opinions of others, especially during potentially sensitive subject areas such as online safety.

During enrichment opportunities students will undertake group projects, such as creating a game or programming a website, and learn how to delegate tasks and be able to create a piece of work as a team.

Opportunity

Studying Computer Science is, in and of itself, an opportunity. As a relatively new subject, Computer Science has only been available for students to study in school in the past 10 years. They now have the opportunity to study a rapidly changing and developing subject area, one that will have a great impact on their lives as they grow as individuals.

As Computer Science is a GCSE subject, students who opt to continue to Years 10 and 11 will have the chance to gain a valuable and respected qualification that will be invaluable should they have aspirations of careers in Science, Technology, Engineering, or Maths.

Students will also have the opportunity to experience the subject more as part of enrichment. By attending code clubs and activities students can develop their appreciation of the subject and have access to materials and resources they may not have access to at home.

Respect

Students will develop respect for technology and computers both as tools for work and as useful and necessary parts of our lives. As computing becomes more ubiquitous students should gain an appreciation for the importance of technology and how to treat it with respect. They should be aware of the risks of online activity and how to treat the Internet with the right level of respect.

Students should also learn how to behave respectfully to others, especially in an online environment. By embedding e-safety into the curriculum students will develop an awareness of how to behave towards others and how to be upstanding online citizens. Students should be able to recognise inappropriate online behaviour and be able to seek support for themselves or the peers should a negative incident arise.

Excellence

Computer Science is a challenging, technical, and practical subject. It demands skills that take time to develop, such as problem solving and programming, and for many students will not be as familiar to them as other subjects.

By rising to this challenge students will be able to achieve their own personal level of excellence, and gain knowledge and experience that students did not have before. By having high expectations, students will be able to overcome these challenges and be proud of what they have achieved.

Curriculum:

Curriculum overview

Computer Science is taught from Years 7 to 11. As such the curriculum attempts to lead the students in a logical progression so that by the time they reach GCSE level they are well prepared for the challenges they face. Also, if students elect not to continue after Year 9 then they have still received a well-rounded and complete Computer Science education.

KS3 Overview

Year 7

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Induction and use of the computer systems	E-Safety	Testing and Consolidation	Computational thinking and algorithms	Programming in Scratch	Testing and Consolidation

Year 8

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2

Computer Systems	Data representation	Testing and Consolidation	Python Programming	Media and Graphics	Testing and Consolidation

Year 9

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Networks and Communication	Cyber Security and Testing	Consolidation and Advanced Python	Computational Thinking and Algorithms	Impacts on society and testing	Consolidation and Spreadsheets

KS4 Overview

At this point students can elect to continue on to complete a GCSE qualification in Computer Science or drop the subject. At GCSE students will follow the OCR curriculum which will consist of two 90-minute exams at the end of their study to determine their final grade.

Year 10

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Python Programming and Computer Systems	Python, Data Representation and Testing	Python and Data Representation	Python and Computer Networks	Testing and Consolidation	Python, Cyber Security and Society

Year 11

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Databases and SQL	Programming Sample Coursework	Exam Preparation	Testing and Consolidation	Exam Preparation	n/a

At GCSE level the topics will broadly align with what students have studied at KS3, just in more detail and technical knowledge. By giving students a foundation in each topic in previous years students should come to the subject with some prior knowledge and groundwork already in place.

Assessment & Feedback

Assessment:

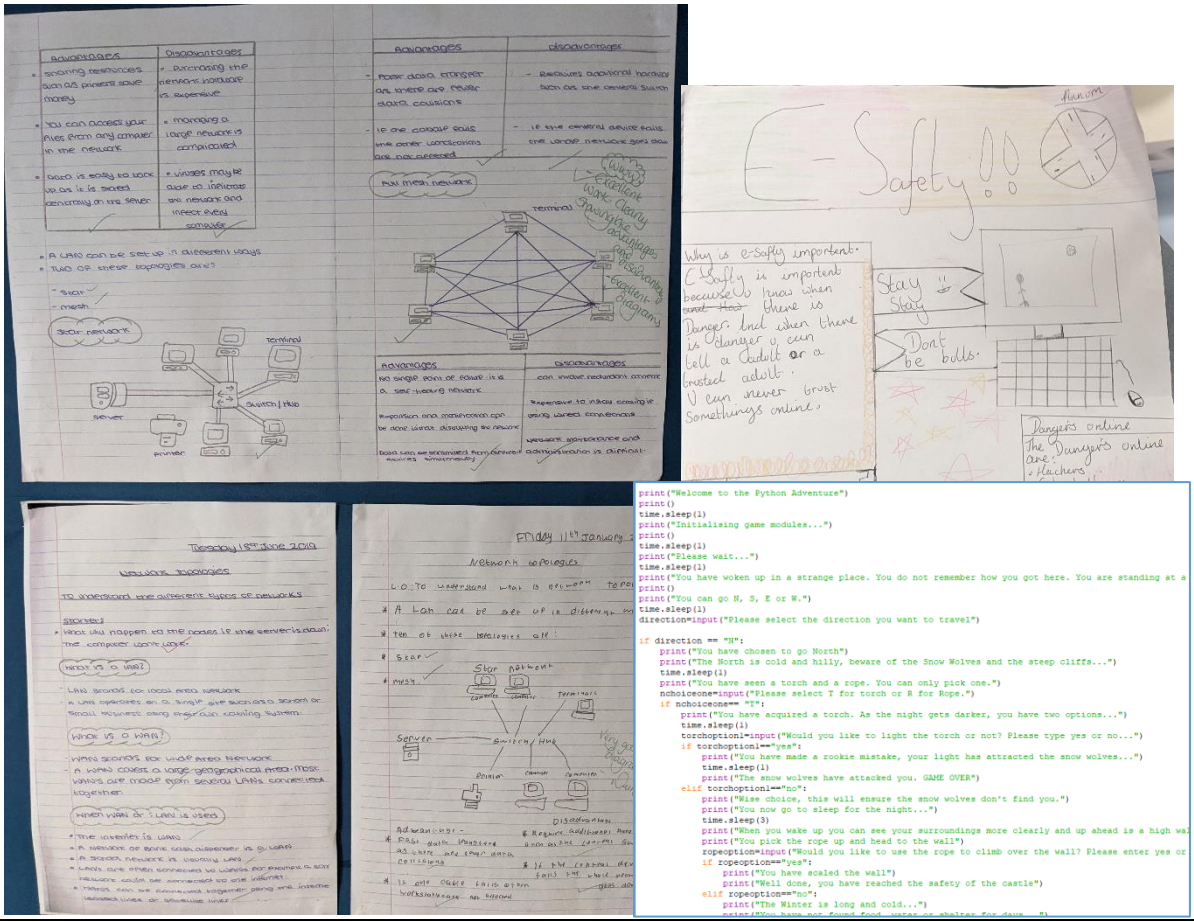
Students' learning will be assessed within lesson through questioning and in-lesson tasks. Do now activities will prepare students for the lesson and assess their understanding of previous topics, and plenaries will summarise their learning and assess their understanding of what has just been covered.
Feedback is primarily conducted live in lesson verbally or through examination of work during set tasks.
Marked feedback is done through self-assessment in red pen as per the marking and feedback policy.
Staff will check that self-assessment is being done appropriately to ensure quality of feedback.
For each unit students will have a summative assessment that tests their understanding of the series of lessons. After each assessment students will have the opportunity to recap their progress and complete tasks to close any gaps in knowledge. Students will be assessed in this way twice a year to ensure a regular record of their progress is being made.
After each assessment, students will consolidate their learning through specific tasks related to areas of the assessment that they were weaker on.

Examples of work:

Students are expected to take pride in their work whether it is on a computer or in their books. Titles and dates must be written and all tasks must be attempted. Students should not graffiti their books or work and all content of their books must be relevant to their work.

When programming students should make sure their code is readable and easy to understand. Variables and functions should be properly named, indents should be applied correctly, and comments should be used to explain the nature of the program being written.

Here are some examples of some student written and programmed work, they demonstrate the standard that is expected of them in Computer Science.



Homework

Students will get announcements on class charts instructing student of homework on Seneca learning.

HOME LEARNING SCHEDULE: Computer Science [SUMMER TERM 2]

Year	Day homework will be set:	Department:	Homework topic title/and type (e.g. Online quiz/written question)					
		Week 1 WB: 06/06/22	Week 2 WB: 13/06/22	Week 3 WB: 20/06/22	Week 4 WB: 27/06/22	Week 5 WB: 04/07/22	Week 5 WB: 11/07/22	Homework Due
7	Thursday	Online quiz SENECA Computational Thinking & Algorithms	Online quiz SENECA Abstraction Thinking	Online quiz SENECA Decomposition Thinking	Online quiz SENECA Algorithmic Thinking	Online quiz SENECA Algorithms	Online quiz SENECA Algorithms	Wednesday
8	Monday	Online quiz SENECA Hardware	Online quiz SENECA Software	Online quiz SENECA Elements of computer systems	Online quiz SENECA CPU	Online quiz SENECA FDE	Online quiz SENECA Logic Gates	Friday
9	Monday	Online quiz SENECA Python – Input/Output	Online quiz SENECA Python – Variables	Online quiz SENECA Python – Data Types	Online quiz SENECA Python - Operators	Online quiz SENECA Python - Selection	Online quiz SENECA Python - Lists	Friday
10	Friday	Online quiz SENECA 1.4.8 Data Compression	Online quiz SENECA 1.5.2 – 1.5.4 Operating Systems	Online quiz SENECA 1.5.5 – 1.5.6 Utility Software	Online quiz SENECA 1.6.1 - 1.6.4 Network Types	Online quiz SENECA 1.6.5 – 1.6.7 Network Hardware and the Internet	Online quiz SENECA 1.6.8 The Cloud	Thursday

Teaching model:

Teaching and learning in Computer Science:

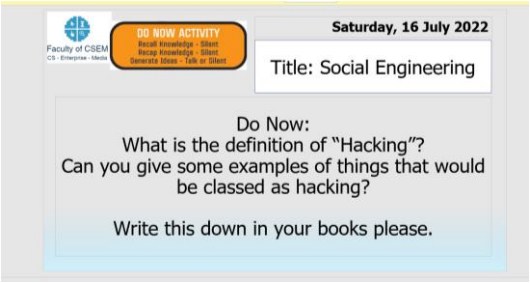
It is important to have a classroom routine pupil can count on every day. Having the same procedures every day cuts down wasted learning time significantly.

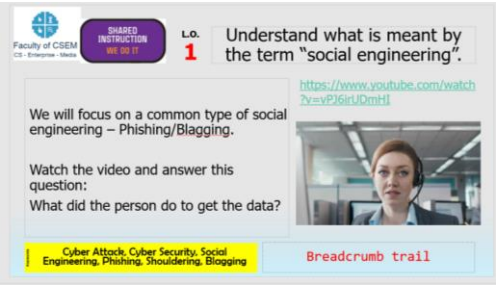
- Our classroom routines promote a positive environment where all pupils can learn.
- Our daily routines include:
- High classroom expectations.
- Meeting and greeting pupils at the door.
- Having the date, title, driving question and "DO NOW" activity on the interactive whiteboard as pupils walk in and settle.
- Well planned and sequenced lessons which promote positive engagement from all pupils and lead to clear progress.

Example of what a typical Computer Science lesson would look like at Rockwood:

Pupils settle into a silent DO NOW activity at the beginning of the lesson which assess prior knowledge or involves consolidation:

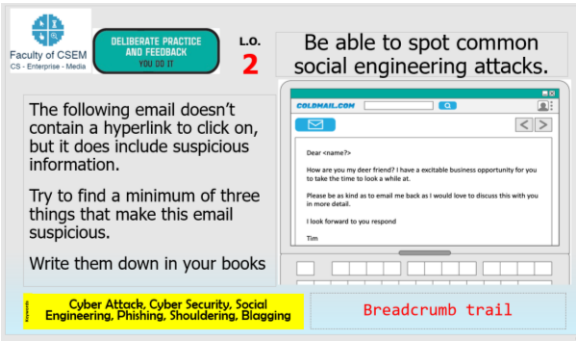
Pupils transition into an "I DO/ WE DO" part to the lesson where the teacher delivers new instruction/theory or ideas.

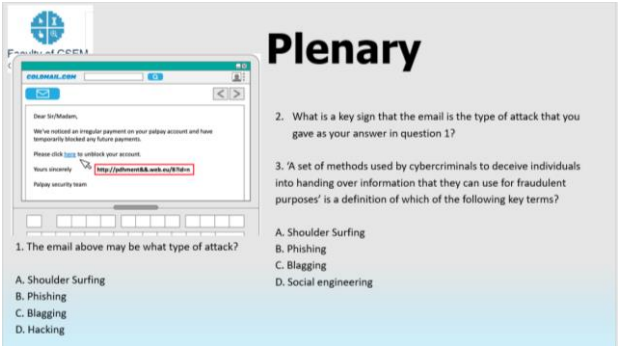


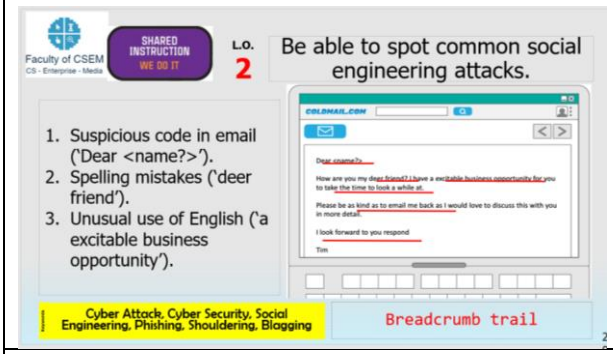


Pupils will then apply the skills they have acquired to a (YOU DO) mini-plenary/ progress task/assessment for learning (AfL) task either independently (if instructed) or with their work partner. This is usually time restricted and instant feedback is provided where pupils will then self/peer assess in red pen.

Finally, pupils will end the lesson with a plenary task which allows them to test their newly learned skills in novel, unfamiliar contexts. This helps further strengthen and develop knowledge, understanding and application.







https://www.bbc.co.uk/bitesize/subjects/z34k7ty

https://www.ocr.org.uk/qualifications/gcse/computer-science-j277-from-2020/

https://teachcomputing.org/curriculum/key-stage-3

https://www.computingatschool.org.uk/resource-library/secondary-computing/ks3-computing

Staffing for department

a) Roles and responsibilities

Head of Department:
Steven Finnegan – SFN
KS3 Computer Science and KS4 DIT Teacher

Teaching Staff:
Rosemary Daley – RDY
KS3 Computer Science Teacher

Alex Win-Pe – AWE
KS3 Computer Science and KS4 Computer Science Teacher