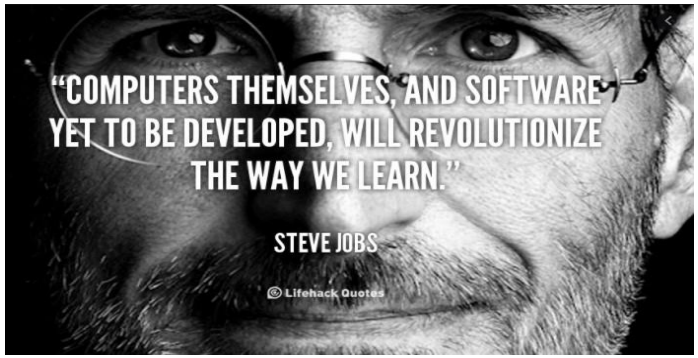
2021-2022

A Guide to Computing at Carlinghow Academy

This document outlines the expectations of how we teach and monitor Computing at Carlinghow Academy: progression across year groups and consistency across school.



Teaching Computing at Carlinghow Academy

INTENT:

We teach a curriculum that enables pupils to become confident, safe and effective users of technology. Across KS1 and KS2 pupils learn computing skills in isolation in order to embed the tools that they need to apply to their rapidly changing world. We provide opportunities for computing skills to be used across the wider curriculum.
At Carlinghow we deliver a high quality Computing curriculum which inspires curiosity and enables a progression of skills.

The aims of teaching Computing at Carlinghow Academy are:

- Can understand and apply the fundamental principles and concepts of Computer Science, including abstraction, logic, algorithms and data representation.
- Can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems.
- Can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems.
- Are responsible, competent, confident and creative users of information and communication technology.
-

There is a 'spiral' approach to sequencing the units, with themes recurring year by year.

This provides ample opportunity for pupils to:
- consolidate technical skills
- achieve fluency with a range of key applications
- develop their knowledge and understanding of the principles that underpin digital technologies and the changing consequences of these for individuals and society.

Each year includes units covering the foundations, applications and implications of computing, ensuring that pupils progress in the computer science, information technology and digital literacy strands of the computing curriculum.

It also encourages creativity, collaboration and thinking skills.

IMPLEMENTATION:

Online Safety

At the start of every half-term we prepare pupils for their digital world with skills to navigate their online environment safely. We use the 'Switched On Online Safety' scheme to deliver this to the pupils.
The teaching content across 'Switched on Online Safety' is split into six key online safety strands:

- developing online safety guidelines
- social and emotional wellbeing and developing resilience
- responsible internet use
- keeping information safe
- digital citizenship
- playing games and having fun

Each strand is covered once in each year group.

Computing

Our pupils explore digital technology for purpose and build competence which they can apply. Implementation of the curriculum in lessons ensures a balanced coverage of Computer Science, Information Technology and Digital Literacy. We link our computing lessons to our topics alongside skills based teaching using the 'Switched On Computing' scheme.

The teaching content is structured around six units of work per year group, each of which has six sessions, or a half term's worth of work.

Computer Science:
In computer science, pupils learn to program first with BeeBots, then ScratchJr, then Scratch and the micro:bit. This takes pupils from a physical manipulative in Key Stage 1, through a pictorial representation of code with to a virtual, on screen, manipulative in which text-based programming is made more accessible through a block-based language. It also ensures progression through key programming constructs, with pupils introduced to sequence with the BlueBot, repetition in ScratchJr, and selection and variables with Scratch and MakeCode for the micro:bit. They develop their computational thinking: the ability to apply programming skills to solve real world problems systematically.

Information Technology:
Pupils acquire skills in using core 'office' applications to work with text, multimedia presentations and data analysis, as well as a competency with digital media from photography and audio to video, animation and virtual reality. The programme of study for computing at Key Stage 1 requires that pupils be taught to 'use technology purposefully to create, organise, store, manipulate and retrieve digital content', and Switched On Computing ensures that they can do this using text, images, sound and video. Building on this at Key Stage 2, Switched On Computing helps them to 'select, use and combine' a variety of software on a range of devices. They work with both numerical data and information across a range of formats including those that combine both words and images

Digital Literacy:
Pupils develop an understanding of how the Internet, the World Wide Web and search engines work, as well as learning how to use these and other technologies safely and responsibly.

Creativity:
We emphasise computing as a creative subject. Many units involve pupils in making digital artefacts, ranging from programs and presentations to virtual models and movies.

Collaboration:
We provide ample opportunity for pupils to learn together: in many units they work in pairs or small groups, and even when working individually there is opportunity built-in for them to give and receive feedback to others. Pupils become increasingly discerning in evaluating online content and their own and others' work.

Thinking Skills:
We encourage pupils to think about digital technology: computational thinking concepts such as logic, algorithms, decomposition and abstraction are emphasised throughout. Pupils are regularly asked to consider the broader moral and ethical issues raised by the technologies they study

EYFS:
To equip our youngest learners with digital skills here at Carlinghow Academy we provide children with a broad, play-based experience of computing in a variety of contexts, including outdoor play.
Computing is not just about using iPads, laptops and digital equipment it is learning about how computers feature in the real world and providing children with computing scenarios.
Children gain skills, knowledge and confidence through opportunities to 'paint and draw' on the interactive whiteboard and explore ICT with equipement such as BeeBots, remote control toys and iPads.

KS1 and KS2:

- Children should do at least one Computing whole class session per week.
- The first session of the half-term is based on Online Safety with the following sessions based on Computing.

The online 'Switched On Computing' resources provide teachers with

- Unit plans
- Teaching slides

- Key Vocabulary slides
- Video Walkthroughs
- Pupils worksheets
- End of unit knowledge quiz

IMPACT:

We prepare our pupils to apply their skills into a digital future, including potential careers. Pupils will leave Carlinghow Academy with the skills to use technology safely and effectively.

We measure the impact through the following:

- Every pupil has an on-line portfolio for their computing work which clearly demonstrates their achievements and progress.
- Opportunity for pupils to share their work with their peers and to get feedback on what went well, or what might have been better.
- Images and videos of the children's practical learning uploaded onto Seesaw.
- Summative assessment of pupil's learning.
- Interviewing the pupils about their learning – pupil voice.

PROGRESSION OF KNOWLEDGE AND SKILLS FOR COMPUTING

	Computer Science	Information Technology	Digital Literacy
Nursery	Recognising that a range of technology is used in places such as homes and schools. Learning that digital and remote control toys are used in school.	Using a simple online paint tool to create digital art.	Recognising that a range of technology is used in places such as homes and schools. When using the internet a long side an adult, or independently learning what to do if they come across something that worries them or makes them feel uncomfortable.
Reception	Recognising that a range of technology is used in places such as homes and schools. Learning what a keyboard is and how to locate relevant keys. Learning that iPads, laptops and remote control toys can be given instructions to solve problems and provide them with information.	Using a simple online paint tool to create digital art. Participate in group image searches, led by the teacher. Representing data through sorting and categorising objects in unplugged scenarios. Representing data through pictograms.	Recognising that a range of technology is used in places such as homes and schools. Learning to log in and log out. When using the internet a long side an adult, or independently learning what to do if they come across something that worries them or makes them feel uncomfortable

	Computer Science	Information Technology	Digital Literacy
Year 1	Children understand that an algorithm is a set of instructions used to solve a problem or achieve an objective. They know that an algorithm written for a computer is called a program. Children can work out what is wrong with a simple algorithm when the steps are out of order. Children know that an unexpected outcome is due to the code they have created and can make logical attempts to fix the code.	Children are able to sort, collate, edit and store simple digital content eg. children can name, save and retrieve their work and follow simple instructions to access online resources or apps.	Children understand what is meant by technology and can identify a variety of examples both in and out of school. They can make a distinction between objects that use modern technology and those that do not eg. a microwave vs a chair.
Year 2	Children can explain that an algorithm is a set of instructions to complete a task. When designing simple programs, children show an awareness of the need to be precise with their algorithms so that they can be successfully converted into code. Children can create a simple program that achieves a specific purpose. They can also identify and correct some errors. Children's program designs display a growing awareness of the need for logical, programmable steps.	Children demonstrate an ability to organise data and can retrieve data for conduction simple searches. Children are able to edit more complex digital data such as music compositions. Children are confident when creating, naming, saving and retrieving content. Children use a range of media in their digital content including photos, text and sound.	Children can effectively retrieve relevant, purposeful digital content using a search engine. Children make links between technology they see around them, coding and multimedia work they do in school. Children know the implications of inappropriate online searches. Children know ways of reporting inappropriate behaviour and content to a trusted adult.

	Computer Science	Information Technology	Digital Literacy
Year 3	Children can turn a simple real-life situation into an algorithm for a program by deconstructing it into manageable parts. Children can identify an error within their program that prevents it following the desired algorithm and them fix it. Children demonstrate the ability to design and code a program that follows a simple sequence. Children's designs for their programs show that they are thinking of the structure of a program in logical, achievable steps and absorbing some new knowledge of coding structures. Children can list a range of ways that the internet can be used to provide different methods of communication.	Children can carry out simple searches to retrieve digital content. They understand that to do this they are connecting to the internet and using a search engine. Children can collect, analyse, evaluate and present data and information using a selection of software. Children can consider what software is most appropriate for a given task.	Children demonstrate the importance of having a secure password and not sharing this with anyone else. Children can explain the negative implications of failure to keep passwords safe and secure. Children understand the importance of staying safe and the importance of their conduct. Children know ways of reporting inappropriate behaviour and content to a trusted adult.

	Computer Science	Information Technology	Digital Literacy
Year 4	Children can turn a simple real-life situation into an algorithm for a program. Children's designs for their programs show that they are thinking of the structure of a program in logical, achievable steps and using coding structures for selection and repetition for example 'if' statements. Children can trace code and use step-through methods to identify errors in code and make logical attempts to correct this. Children recognise the main component parts of hardware which allow computers to join and form a network. Their ability to understand the online safety implications associated with the ways the internet can be used to provide different methods of communication is improving.	Children understand the function, features and layout of a search engine. They can appraise selected webpages for credibility and information at a basic level. Children are able to make improvements to digital solutions based on feedback. Children make informed software choices when presenting information and data.	Children can explore key concepts relating to online safety using concept mapping. Children can help others to understand the importance of online safety. Children know a range of ways of reporting inappropriate content and contact.

	Computer Science	Information Technology	Digital Literacy
Year 5	Children may attempt to turn more complex real-life situations into algorithms for a program by deconstructing it into manageable parts. Children are able to test and debug their programs as they go and can use logical methods to identify the approximate cause of any bug but need some support identifying the specific line of code. Children can translate algorithms that include sequence, selection and repetition into code with increasing ease and their own designs show that they are thinking of how to accomplish the set task in code utilising such structures. Children understand the value of computer networks but are also aware of the main dangers. They recognise what personal information is and can explain how this can be kept safe. Children can select the most appropriate form of online communications contingent on audience and digital content.	Children search with greater complexity for digital content when using a search engine. They are able to explain in some detail how credible a webpage is and the information it contains. Children are able to make appropriate improvments to digital solutions based on feedback received and can confidently comment on the success of the solution. Children are able to collaboratively create content and solutions using digital features within software such as collaborative mode. They are able to use several ways of sharing digital content.	Children have a secure knowledge of common online safety rules and can apply this by demonstrating the safe and respectful use of a few different technologies. Children implicitly relate appropriate online behaviour to their right to personal privacy and mental wellbeing of themselves and others.

	Computer Science	Information Technology	Digital Literacy
Year 6	Children are able to turn more complex programming task into an algorithm by identifying the important aspects of the task and then decomposing them in a logical way using their knowledge of possible coding structures and applying skills from previous programs. Children test and debug their program as they go and use logical methods to identify the cause of bugs, demonstrating a systematic approach to try to identify a particular line of code causing a problem. Children translate algorithms that include sequence, selection and repetition into code and their own designs show that they are thinking of how to accomplish the set task in code utilising such structures. Their coding displays an improving understanding of variable in coding, outputs such as sound and movement. Children understand and can explain in some depth the difference between the internet and the World Wide Web. Children know what a WAN and LAN are can describe how they access the internet in school.	Children readily apply filters when searching for digital content. They are able to explain in detail how credible a webpage is and the information it contains. They compare a range of digital content sources and are able to rate them in term of content quality and accuracy. Children use critical thinking skills in everyday use of online communication. Children make clear connections to the audience when designing and creating digital content.	Children demonstrate the safe and respectful use of a range of different technologies and online services. Children recognise the value in preserving their privacy when online for their own and other people's safety.

What is expected to be seen when teaching Computing?

- To prepare for lessons and understand the hardware/software required so that there is an understanding of the process the children will experience.
- Each child to working on their own device.
- The use of 'Switched On Computing' scheme's slides for the lesson.
- Knowledge organisers need to be displayed in the class room.
- Children's work needs to be saved on the server.
- Good examples of children's work to be displayed in the classroom.

Differentation:

If a child is not working at their Age Related Level then units from the year group within that child's working age can be used.

Monitoring:

- Global share to be monitored for evidence of children's saved work.
- Seesaw to be monitored for evidence of children's work, particularly cross-curricular work where technology can be used.
- End of unit quizzes to be used in order to inform understanding.
- Target Tracker to be used to monitor progress on a termly basis.
- Pupil voice - pupil interviews/questionnaires.