Oswald Road Primary School - Subject intent statement

SUBJECT

What are the aims and purpose of this subject?

At our school we want pupils to be masters of technology and not slaves to it. Technology is everywhere and will play a pivotal part in students' lives including our youngest pupils in EYFS. Therefore, we want to model and educate our pupils on how to use technology positively, responsibly and safely. We want our pupils to be creators not consumers and our broad curriculum encompassing computer science, information technology and digital literacy reflects this. We want our pupils to understand that there is always a choice with using technology and as a school we utilise technology (especially social media) to model positive use. These aims strongly tie-in with the school's value of instilling independence, creativity and resilience into our pupils. We aim to ensure all our SEND children access Computing at an appropriate pitch (both for challenge and support) and have full access to the curriculum. This means they access the computer science, informational technology and digital literacy strands of the curriculum. We are aspirational for all children.

We are also aware of the national curriculum aims which are to to ensure that all pupils:

- 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.

What are the National Curriculum requirements for this subject?

The National Curriculum for Computing states that pupils from Key Stage 1 upwards have an understanding of what alogrithms are and how they work and that all pupils are able to create and de-bug simple programs. The curriculum also emphasis the role of logical reasoning and the importance of using technology purposefully. The curriculum also highlights the importance of staying safe online and knowing how to report any issues encountered when online. To this end, there are three aspects to the Computing curriculum: Computer Science (CS), Digital Literacy (DL) and Information Technology (IT). 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 and are 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.

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We are aware of the specific subject content in each key stage.

Key stage 1

Pupils should be taught to:

- understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions
- create and debug simple programs
- use logical reasoning to predict the behaviour of simple programs
- use technology purposefully to create, organise, store, manipulate and retrieve digital content
- recognise common uses of information technology beyond school
- use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.

Key stage 2

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.

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How is this subject's curriculum organised?

In EYFS pupils are introduced to some elements of the Computing curriculum, such as using digital devices to type and take images and using specific apps to produce different types of artworks. We also show children how digital devices can be used to record voices during storytelling activities. Some elements of computational thinking are also covered such as following a simple algorithm by responding to a set of oral instructions and using logical reasoning to explain thought processes and justify decisions. In digital literacy, pupils in EYFS are introduced to the concept of online identities and are shown how the internet can be used to help people communicate online.

In KS1, we introduce pupils to the core concepts of Computer Programming through the use of Scratch Junior. This is a tablet-based app that uses a visual programming language and allows pupils to create a variety of different projects. Scratch Junior gives younger pupils the opportunity to learn the basic fundamentals of computational thinking such as sequencing and algorithms. In KS1 we also unplugged activities and programmable robots called Bee-Bots to consolidate the children's understanding of algorithms.

Children in KS2 then build on these skills by using the desktop version of Scratch. This program enables students to develop knowledge, understanding and skills in computer programming. The desktop version of Scratch uses a more sophisticated visual programming language in which pupils can create interactive programs such as stories, games, interactive quizzes and animations. As students create with Scratch, they learn to think creatively, work collaboratively and reason systematically. Children in KS2 build on the programming skills they have learnt in KS1 but are now introduced to concepts such decomposition, conditional loops and variables.

The Computer Science strand of the curriculum will be taught discreetly, with each year group having blocks of lessons dedicated to working on a distinct project programming project. As well as printed planning resources, the Computing lead also sits with each year group to discuss their Computer Science project and talk through key teaching points and learning opportunities.

The Digital Literacy element of the curriculum is divided into six topics: Managing Online Information; Online Bullying; Copyright and Ownership; Health, Wellbeing and Lifestyle; Online Relationships; Self-Image and Identity. Digital Literacy lessons will focus on a particular topic each half term. To support the teaching of Digital Literacy we use the resources from Natterhub. This site allows teachers to access a wide range of high-quality, engaging content linked to whichever topic they are teaching.

A key reason for choosing Natterhub to deliver Digital Literacy lessons is the excellent assessment opportunities it provides. All lessons start with a baseline assessment so that pupils can state their understanding of a topic before teaching begins. The majority of lessons then include interactive polls and questionnaires which give teachers real-time formative assessment data. As well as this, all lessons come with a post-session quiz so that pupils can demonstrate their learning and understanding of the content taught. All of this assessment data is automatically stored in the relevant class hub so that teachers can easily identify the progress made by their pupils and also how each pupil has contributed to any particular lesson.

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The curriculum lead for PSHE is also the lead for Digital Literacy as there is a strong overlap between the two subjects. This overlap is likely to increase in the coming years as our pupils spend an increasing amount of their time online. As a result, Digital Literacy lessons will be taught in PSHE slots where there is an overlap in content such as Online Bullying. This will depend on the PSHE curriculum of each year group. Digital Literacy sessions can also be used as an opportunity to address any issues that have arisen outside of school regarding the inappropriate use of technology. We also use national events such as Safer Internet Day to consolidate pupils' knowledge and understanding of online safety and to increase parental engagement with these issues.

To deliver the Information Technology strand of the curriculum, teachers in both KS1 and KS2 will carry out a D.A.R.E.S project from the Mr P website with their classes. These projects each have a particular focus such as animation, video creation or e-book design. All the projects will give pupils the chance to improve their understanding of how technology works and to think creatively about how digital content can be planned, edited and shared.

Assessment in Computer Science and Information Technology primarily focuses on formative assessment, with teachers addressing misconceptions during the course of the lesson. To facilitate this, teachers plan in deliberate mistakes during their teaching input so that pupils have the chance to identify and debug coding or input errors. At the start of a project baseline assessment takes the form of directed teacher-questioning with the aim of establishing what previously-learned skills their pupils can recall and how these might be relevant to the project they are about to start. Although there are no specific end of unit summative assessments, pupils are given opportunities to show their finished projects and this allows teachers to evaluate their pupils' learning and progress.

We ensure our SEND children access Computing with the appropriate level of challenge and support. All of our SEND children (and within our Universal Offer) have access to appropriate and well-considered visual support aides. Re-visiting prior learning helps to ensure our SEND pupils are able to access the content of Computing lessons. Splitting some computer science concepts into smaller chunks is also a strategy that is used, alongside the use of tailored questioning to ensure understanding.

Our most complex SEND children (Pupils with an EHCP) have 1:1 support or work in small groups to ensure they receive the necessary help and guidance.

Why is it organised like this?

Although Computing is not explicitly mentioned within the EYFS statutory framework, there are clearly many opportunities for young children to use technology to solve problems and produce creative outcomes. In particular, many areas of the framework give our pupils the chance to develop their ability to use computational thinking effectively through the use of age-appropriate hardware such as Beebots and relevant iPad applications. We introduce our EYFS pupils to the early stages of the digital literacy curriculum as we recognise that schools today play an increasingly central role in teaching appropriate online behaviour. We are also keenly aware that it is vital to start teaching our pupils how to stay safe online from the moment they become part of our school community.

We use the Scratch Junior app and Scratch desktop programs as these are widely-recognised by Primary Computing experts as being the best resources for introducing pupils to the core concepts of Computer Science. These programs allow pupils to 'drag and drop' blocks of code in order to create a range of different algorithms and are therefore very user-friendly and visually engaging. Although Computer Science lessons are taught discreetly, we still attempt to make cross-curricular links where possible. This is especially true for maths, where the Computer Science projects have been chosen to link in with each year group's maths topics (for example coordinates, multiplication and angles). For our most complex children (pupils with an EHCP), receiving 1:1 support or working in small groups allows for the pitch of the learning and the pace of the learning to be suitably adapted to the needs of the particular pupils.

Delivering a project with an Information Technology focus from the D.A.R.E.S scheme of work will ensure that pupils meet the relevant targets set out in the National Curriculum. The projects chosen allow for a progression of skills, starting with the simple manipulation of media within apps in KS1, moving towards the more innovative use of technology to create original digital content in KS2. Adopting a cross-curricular approach to the Information Technology strand of the curriculum highlights the school's ethos that technology should be safely and responsibly embedded into all areas of learning and that pupils should have a sound understanding of how and when technology can be used to enhance their learning.

We use Natterhub to deliver the Digital Literacy strand of the curriculum as their resources are extremely well-organised for teachers and very engaging for pupils. Their scheme of work follows the programme set out by the UK Council for Internet Safety. The structure of Natterhub lessons provides a unique, interactive way for our pupils to become safe and kind digital citizens. The use of polls and discussion points within Natterhub lessons provide excellent formative assessment opportunities for teachers, whilst the content on themes such as Artificial Intelligence and children's mental health equip students to learn about complex issues in a thoughtful, age-appropriate way. All the content is tailored for the targeted year groups, covering issues such as acceptable online behaviour in KS1 and moving on to areas such as identity theft and digital copyright in KS2.

How are knowledge, understanding and skills developed in this subject?

Through the effective implementation of the Computing curriculum we aim to ensure that all pupils at Oswald Road Primary School:

- Are confident in using code and can understand and apply the fundamental

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principles and concepts of computer science, including 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.
- Effectively communicate and can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems
- Are able to connect with others responsibly and are competent, confident and creative users of information and communication technology

See progression document for full details.

What does this subject look like…

in lessons?	in books?	in the environment?
Lots of opportunities for collaborative work and lessons in which children work together and solve problems and find solutions through independent experimentation. Some lessons will require a larger element of teacher modelling, for example when children are first introduced to a new piece of software. Digital Literacy lessons will be largely built around group discussions, with pupils sharing their thoughts on the topic being studied.	It makes more sense for most work to be recorded via pictures and videos which can then be uploaded to SeeSaw.	Working walls in the Computing Suite can show examples of children's algorithms and any projects they have created. Displays in the Computing Suite also contain reminders about internet safety and responsible online behaviour. The school also has an 'acceptable use' policy which all pupils and staff must agree to before logging in.

How is this subject resourced?

All year groups require access to the suite of PCs and also need access to working iPads that have been installed with the relevant programs and apps.