Our Computing Curriculum
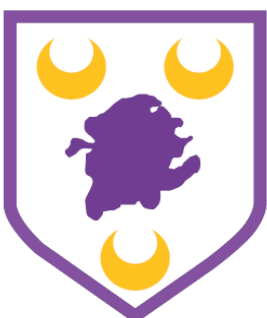
Newcomen Primary School

"Computing is not about computers anymore… It is about living."

Nicholas Negroponte

NEWCOMEN

scientia potentia est

Newcomen Primary School is committed to safeguarding and promoting the welfare of children and expects all staff, volunteers and visitors to share this commitment.

All children are provided with equal opportunities and equal access to the Computing curriculum. At Newcomen Primary, we are committed to ensuring equality of opportunity for all pupils, staff, parents and carers irrespective of race, gender, disability, belief, sexual orientation, age or socio – economic background.

This document is a statement of our Intent for, and the Implementation and Impact of the teaching and learning of Computing at Newcomen Primary School.

Intent

Newcomen Primary School has the highest of expectations of all our pupils. It is our intention to provide our pupils with a high quality, ambitious education in Computing. Our pupils are engaged and committed learners: they show commendable endeavour in their learning and we aim to promote a lifelong affinity with technology and digital literacy.

At Newcomen Primary School, we aim to prepare children for their futures by giving them the tools they need to thrive in an ever changing, ever expanding, digital world. Knowledge and understanding of Computing and more widely, ICT, is of paramount importance for children's futures both at home and in the workplace. Our Computing curriculum focuses on a progression of skills in digital literacy, computer science, information technology and online safety to ensure that children become highly skilled and confident in safely using, as well as understanding, technology. These strands are revisited repeatedly through a range of themes during children's journey through school to ensure the learning is embedded and skills are successfully developed. Our intention is that Computing also supports children's creativity and cross-curricular learning to further engage and enrich their experiences in school.

Through our study of Computing, our intent is for our children to:

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

Our Aims:

Key stage 1

Pupils will 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 will 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.

Implementation

At Newcomen Primary School, our entire curriculum is shaped by our school's mission statement: 'Believe, Achieve, Succeed' which aims to enable all children, regardless of background, ability, or additional needs, to flourish and become the very best version of themselves.

To ensure a broad range of skills and a wider, more robust understanding, Computing is taught across three main strands: digital literacy, computer science and information technology. As part of information technology, children learn to use programs, express themselves and develop their ideas through ICT. Within digital literacy, children develop practical skills in the safe use of ICT and the ability to apply these skills to solving relevant, worthwhile problems; for example understanding safe use of internet, networks and email. In computer science, we teach children to understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation. This includes the ability to analyse problems in computational terms and enjoy practical experiences of writing or de-bugging computer programs in order to solve them.

We also teach a progression of Computing vocabulary to support children in their understanding; this begins in reception and runs right through until the final term in Year 6.

Our school uses Purple Mash to deliver a high quality, knowledge rich and ambitious curriculum. Purple Mash is a cloud-based platform for primary-aged children. It contains a wide range of age-appropriate, creative software tools for writing, drawing, coding, animating, blogging and much more. In addition to these programs, the platform provides resources and themed lesson activities, which can be set for pupils to do at home. Feedback on their work can then be provided to the pupil, including recorded audio feedback, and all the work is stored online, within Purple Mash.

At Newcomen Primary School, we give children access to a wide range of high quality resources and provide cross curricular opportunities for children to apply their Computing knowledge and skills. Online safety is taught within each Computing lesson as a short starter activity as well as being delivered as a unit at the beginning of each academic year. Online safety advice and procedures are communicated with parents/carers via an termly newsletter. This includes advice on safer use of streaming services for children, keeping private information safe and ensuring that children know what to do if they have a negative experience online.

Vocabulary

Computing is inherently imbued with many specific terms that to many, constitute an almost 'other language'. It is therefore paramount that children have a robust understanding of all relevant Computing vocabulary. At Newcomen Primary School, year group specific vocabulary is taught and builds from Y1 through to Y6. Vocabulary is revisited and revised at every opportunity. This ensures our children are confident using the correct terms when discussing programs, concepts and systems.

Assessment, Recording and Reporting

Assessments are undertaken in line with our school assessment policy. Teachers use effective assessment for learning to review prior attainment and ensure that pupils clearly understand the next steps in their learning. Assessment for computing is based on the objectives and expectations outlined in the National Curriculum. The objectives for each key stage are based on the statutory programmes of study.

Early Years

In Early Years, technology is used to further embed learning, enhance enjoyment and interaction and evidence work. Our large touch-screen monitors and other electronic devices are used for drawing, watching videos, interactive games and to support role play. Children investigate a range of mechanical and digital equipment to discover 'how things work' and to 'fix broken equipment'. Technology permeates many of the Early Years 'areas'. Listening Centres such as CD players and headphones are used so that children can enjoy stories independently or in small groups and become immersed in audio books. IPads are used to take pictures and celebrate achievements or evidence pieces of work.

Staff Development

All staff members keep up to date with subject knowledge and use quality resources to support their delivery of an ambitious and stimulating curriculum. All teachers and support staff attend staff training. Training needs, based on the local and national initiatives, are identified, planned and delivered by the Computing Team.

Resources and Accommodation

The school is very well-resourced in terms of computing and technology. All classrooms have smartboard technology, webcams and digital audio. At present, we have 70 IPads with smart charge and update charging trolleys. In terms of PCs, we have 35 Very laptops, 19 Lenovo laptops and, through application to the governments Covid 19 scheme, 41 Dell laptops. All devices have wireless access to our school network, to ensure operating systems and programs are up to date and that the work of children and adults is stored securely. All staff have encrypted memory sticks for external storage of data.

Monitoring and Evaluation

Monitoring and evaluation is undertaken by Computing leads Mr Beckett and DHT Mr Jones.

Home School Partnership

All children are given individual logins and passwords and are encouraged to access online educational resources at home. These include full-suite access for Purple Mash, Times Tables Rock Stars, NumBots and Discovery Coding.

Impact

The implementation of this curriculum ensures that when children leave Newcomen Primary School, they are confident, competent and safe users of ICT with solid understanding of systems, data storage and how technology works. All children will possess the knowledge and perspicacity to stay safe online and use social media responsibly. Our children will develop skills to express themselves and be creative in using digital media and be equipped to apply their skills in Computing to a range of different challenges.