Barnfields Primary School: Computing

Subject Leader Curriculum Intent, Implementation and Impact Overview			
Subject Quest: *Study the design, development and analysis of software and hardware used to solve problems in a variety of contexts.*			
The Three Core Concepts at Barnfields			
Coding		Design	e-Safety
Intent	**Supporting Research**	**Implementation**	**Impact**
At Barnfields Primary School, we value the importance of a high-quality computing curriculum. We believe 'computational thinking' is a skill children must be taught if they are to be able to participate effectively and safely in this digital world. Our computing curriculum ensures that our children are digitally literate – able to use, express themselves and develop their ideas through information and communication technology	**Wolfram (2016)** states the importance of computational thinking is that, 'It'll be a defining feature of the future – and children need to learn it now in order to succeed in the future.' **Wing (2011)** supports this by predicting that, 'Computational thinking will be a fundamental skill used by everyone in the 21st century. Just like reading, writing and arithmetic.' The impact this skill will have is also identified by **Nadella (2015),** who states that, 'Computational thinking will be in every aspect of our economy. Let's bring that skill, so that it is taught in our schools, like biology or like chemistry.' This is reflected by the **DfE (2013)** in the computing programme of study and states that children should be, 'at a level suitable for the future workplace and as active participants in a digital world.'	As Richard Riley once said, 'We are currently preparing students for jobs that don't exist yet, using technologies that have not been invented, in order to solve problems that we don't even know are problems yet.' At Barnfields, we are preparing our children for their own futures, through having a computing curriculum that is **relevant,** thus developing the necessary skills and knowledge needed to succeed later on in life. Our school values of **resilience** and **positivity** are embedded during lessons, in order for all children to take the risks needed to have a lifelong love of learning, broadening their horizons in our ever-changing technological world. We want our children to have **ambition** and to have careers that inspire them. Our children begin their technology journey in Early Years, where they have access to a range of resources to help them develop and support early communication and language skills. Children are given a plethora of opportunities to solve problems and produce creative outcomes, promoting use of imagination and experiences to help them make connections in their learning. Other opportunities are given to support the early development of effective computational thinking through undertaking projects involving concepts and approaches suggested by Computing at School's CAS 'Barefoot Computing' resources. From Years 1-6, our pupils are taught computing through 'Kapow', which is a comprehensive, spiral scheme of work. It follows three key principles: cyclical (pupils revisit the 5 key areas throughout	Children will achieve age related expectations in computing at the end of the year. Children will be confident, show resilience and develop the skill of 'trial and error' when solving problems. Children will be able to use the correct computing terminology. Children will be competent users of technology.

Subject Quests/Core Concepts:

At Barnfields Primary School, we understand that all subjects seek to do something – or rather the people engaging in them are seeking to do something, either collectively or individually. Once we understand the intended nature of each subject, we can then consider at greater length the knowledge that is to be imparted. These 'quests' and 'Core Concepts at Barnfields' enable us to engage in informed discussions and decisions around curriculum planning and teaching in the classroom.

	The art of 'thinking outside the box' and problem solving was also commented on by **Steve Jobs (2017)** who claimed that, ''Everyone should learn to program a computer, as it teaches you how to think.'' **Saujani (2016)** writes about her work on 'Girls Who Code' and supports this concept as a way of getting children to think through trial and error. 'Coding is an endless process of trial and error, of trying to get the right command in the right place, with sometimes just a semicolon making the difference between success and failure. Code breaks and then falls apart, and it often takes many, many tries until that magical moment when what you are trying to build comes to life.'	KS1 and KS2), increasing depth (each time a key area is revisited, it is covered with greater complexity) and prior knowledge (upon returning to each key area, prior knowledge is utilised so pupils can build on previous foundations, rather than starting again). Prior learning is identified and built upon during each lesson, ensuring that progression across a unit of work is seen and embedded. Retrieval practice is used to recall learning from previous lessons enabling effective retention of knowledge in the long-term memory. This is vitally important, as children will be able to draw more effectively on their computing knowledge to help them offer successful solutions to problems across the three main strands of computing. This computational thinking will be embedded throughout lessons and promoted in the wider curriculum. Correct computing terminology will be used and embedded during each lesson and all children will be expected to use these confidently and understand the meaning of them.	
Additionally, we aim to ensure that all children at Barnfields Primary School are equipped not only with the skills and knowledge to use technology effectively and for their own benefit, but more importantly – safely. The biggest impact we want on our children is that they understand the consequences of using the internet and that they are also aware of how to keep themselves safe online.	**Heather Cardwell** has written on behalf of **National Online Safety** and emphasises that primary schools should not be reactive when it comes to dealing with online safety. She states that, 'Online safety needs to be taught as part of the curriculum with dedicated lessons – prevention is better than cure. In addition to being explicitly taught, key online safety messages need to be referred to little and often.' The **NSPCC** states that this should be done 'in an open environment in	Online safety is taught effectively through our progressive, scheme of work 'Kapow'. Units of work are taught over the year in each year group and revisited termly. Prevention of the issues surrounding e-safety and its implications are discussed throughout these lessons and embedded throughout the curriculum. Close links are made in the wider curriculum, such as during our PSHE lessons using 'Jigsaw', which is a spiral, progressive and relevant scheme of work. We will also use 'Project Evolve', which is a part of the UK Council for Internet Safety (UKCIS) to supplement any work that is needed in response to the children's needs. Online safety issues that arise in certain year groups are promptly dealt with and discussed. The online safety lessons can be adapted	Children will be aware of the risks of using the internet and know how to keep themselves safe online. Children will know what to do if they feel unsafe online. Children will be able to use the internet safely and respectfully.

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<tr><td></td><td>which children and young people are encouraged to ask any questions and participate in an ongoing conversation about the benefits and dangers of the online world.'

The **DfE (2019)** supports this by emphasising the need for, 'schools to have an understanding of the risks that exist online so that they can tailor their teaching and support to the specific needs of their pupils.' There are also many positives to using the internet and the **DfE** supports this by stating that they want schools, 'to equip their pupils with the knowledge needed to make the best use of the internet and technology in a safe, considered and respectful way, so they are able to reap the benefits of the online world.'

Ofsted (2012) recommends that, 'All schools should continue to make e-safety a priority in the curriculum, in staff training and in support for parents.'</td><td>and tailored to fit in with any of the children's needs. The school's values of **respect** and **responsibility** will be at the core of this and children will be taught how to deal with such issues.

Once a year, we will celebrate 'Safer Internet Day' and each year group will be required to support this by engaging in the theme for that year. Safer Internet Day is celebrated globally to promote the safe and positive use of digital technology for children and young people, and to inspire a national conversation about using technology responsibly, respectfully, critically and creatively.</td><td></td></tr>
<tr><td>*By the time they leave Barnfields Primary School, children will have gained key knowledge and skills in the three main areas of the computing curriculum: computer science (programming and understanding how digital systems work),*</td><td>**The National Curriculum (2013)** states that, **'**The curriculum aims to equip young people with the knowledge, skills and understanding they need to thrive in the digital world of today and the future. The curriculum can be broken down into</td><td>All three strands of the computing curriculum will be covered over the year in each year group using 'Kapow'. These strands are clearly identified in the long-term and short-term planning provided by 'Kapow' and as part of our own 'Subject Road Map'. A new unit will be completed per half term and some units of work will cover one of the computing strands, whereas many incorporate 2 or 3 of them. The interlinking of these strands will</td><td>Children will understand what the 3 strands of computing are (Computer Science, Information Technology and Digital Literacy).</td></tr>
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information technology (using computer systems to store, retrieve and send information) and digital literacy (evaluating digital content and using technology safely and respectfully).	3 strands: computer science, information technology and digital literacy, with the aims of the curriculum reflecting this distinction.' According to **iCompute (2021),** Ofsted will be looking for the quality of computing and schools must ensure that 'work builds on prior learning, the pupils' work shows that a broad range of topics are being learned, pupils retain knowledge and can talk about their work, progression is being made and pupils regularly revisit and practice what they know.'	help our children to make connections in their computing knowledge, showing good progression of skills and understanding. It is important that all children understand what computing strand they are learning about during each unit, in order to build a good understanding of the different components of computing and how they link together. Progression of skills and key knowledge is clearly seen across all of the Kapow units of work and each one is built upon across each year group and across each key stage.	Children will be able to identify which of the three strands they are studying during each unit of work. Children will begin to make connections across the three strands of computing.

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