ST. ANNE'S C.E.(VC) PRIMARY SCHOOL

Computing Curriculum Statement

'Together with God, Making Learning a Life Long Friend'

Context and Rationale:

Our children are growing up in an increasingly technological world, so the ability to understand all aspects of computing is an increasingly essential life skill for our children. The majority of children coming into St Anne's arrive with a lot of hands-on experience gained from an unprecedented access to technology from a very early age. We find that they now demonstrate an aptitude for computational devices such as smartphones and tablet computers with an unparalleled intuition, in some cases before they are even forming comprehensible words. As such, our task is to equip them to hone the skills, knowledge and understanding of computing while developing the ability to use technology and the Internet appropriately and safely. We believe that high-quality computing lessons will inspire children to think innovatively and develop creative procedural understanding, alongside the development of their declarative knowledge. Computing is a subject that provides children with the means to access almost infinite information and to express themselves creatively and practically to audiences ranging from a handful of their friends to the entire online world. We want children to acquire the skills and knowledge of computing in a systematic way so that each child is able to produce results that demonstrate their achievements, and so they are enabled to access the digital world appropriately, safely, productively and responsibly.

Our Approach:

After spending some time exploring different schemes, we have settled on using the published scheme Purple Mash as a framework to operate within as the units of study are well-linked to the National Curriculum. Purple Mash offers us a cohesive scheme of work to use which ensures that objectives are met in a progressive and logical manner. It also provides us with a system of cloud saving that the children can access for their work, as well as a wealth of resources available to children for use at home which can support learning across the curriculum. While we use this published scheme as the core framework within which to operate, we do deviate from it where doing so can better provide for the children's needs and give them a better learning experience, for example by using Microsoft Office software for word processing and spreadsheets at the delivering teacher's discretion rather than Purple Mash's own web applications, as getting familiar with an industry standard application is much more relevant, particularly for those in upper Key Stage 2 looking towards their transition into Key Stage 3.

Our computing curriculum fits the needs of our children as the school has concerns around e-safety and the potential vulnerability of some children. We recognise the importance of e-safety and as such each year group covers it at the beginning of each year in computing as their

first unit of study. Elements of this are also covered throughout the year during PSHE, in whole-school assemblies and in other computing units of study. Computing is delivered as a standalone lesson each week for every class in Key Stages 1 and 2, and in Early Years relevant objectives are covered through their continuous provision and topic-based planning.

For further information on our approach to online safety, please refer to our separate Online Safety Curriculum Statement.

Our curriculum is designed to be progressive, with each year building on skills encountered in previous years, typically presenting new skills with clear step-by-step modelling one chunk at a time, in line with current understanding of cognitive load theory and the expertise reversal effect (Lee and Kalyuga, 2014), which implies a need to develop an adaptive learning environment whereby novice learners can build up effective schemas of learning by focusing on one unit of information at a time. These schemas can then be applied more effectively by more advanced learners without the need to continually return to re-learning the same constituent skills they have already encountered. This retention and retrieval of prior learning is supported by the use of computing jotters for note-taking and answering questions during lessons, which is currently being trialled by the computing lead in years 4, 5 and 6, as research suggests that a multimodal approach during lessons that incorporates both technological and analogue paper-based media can be beneficial to the learning process by facilitating different ways of thinking about and engaging with lesson content (Oppenheimer, 2019).

Children enjoy computing and we seek to use it more to deepen their learning across the curriculum through cross-curricular activities in our efforts to ensure that our wider curriculum is broad and balanced. In addition, we offer extracurricular activities that use children's computing skills and wider thinking. Since 2019 we have offered an extracurricular Technical Lego club that encourages lateral thinking and teamwork and challenges children to create very precise instructions in order to get their robot to solve a specific task. We also offer a Maths in Motion club that encourages practical thinking applied to engineering through a digital medium, wherein children design and tweak racing cars and then compete in very stringent races that account for tyre wear, weather condition and fuel economy.

None of our staff have specific subject specialism at degree level in information technology and information systems, computer science, information science, software engineering, computer engineering or cybersecurity. As part of our drive to ensure consistency and quality in our approach to teaching computing, our subject lead teaches years 4, 5 and 6. While his subject specialism is also not in any of these areas, his continual research into best practice, particularly via his membership of the Chartered College of Teaching and their *Impact* publications, as well as attendance of *Computer Science in Schools* Conferences at Staffordshire University, attempts to address this very common shortcoming in primary computing education.

At St Anne's we aim to provide an education in computing that enables all pupils to:

- understand and apply the basic principles and concepts of computer science, including presentation, algorithms and data representation,
- analyse and debug 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, and
- be responsible, competent, confident and creative users of information and communication technology.

Pandemic Disruption:

During the COVID-19 lockdowns, our children faced an unprecedented disruption to their whole lives, not just their education. While during lockdown we all worked tirelessly to provide the children with the best opportunity to access their entitlement to a broad and balanced curriculum, individual circumstances meant that there was a wide variance in how this curriculum was accessed across different sections of our community as families did their best under sometimes very challenging conditions.

In order to address this in computing, for the academic year 2021-2022, all classes used our scheme's "Crash Course" versions of each unit of study. These require no prior knowledge built up from previous years' units, and provide an accelerated progress towards meeting the key objectives in each unit, albeit with a somewhat stripped-down approach. We have found that this enabled children to access units much more easily in the academic year 2022-2023 so that their learning in computing could thus be resumed properly.

Outcomes:

Our Computing curriculum is high quality, well thought out and planned to demonstrate progression. If children are keeping up with the curriculum, they are deemed to be making good or better progress. As computing by its nature sees children engage with learning in a very different way to the majority of learning in other subjects (via use of a computer rather than pen and paper), in cases where a child struggles to achieve highly or experience satisfying progress in other subjects, it is often in computing that these children might find that they can flourish and even excel. Those who struggle to write, for example, may often find that in computing this is much less of an impediment than in other subjects. Swann and Peacock et al's *Creating Learning Without Limits* (2012) was a foundational text in the computing subject leader's reading during his early teaching career, and as such the concept of teaching without the determinist concept of fixed ability, and instead of enhancing the learning capacity of every child as an individual, is firmly embedded in the way in which we approach teaching computing at St. Anne's. Similarly, so are Rosenshine's Principles of Instruction, which emphasise the need for reviewing previous learning, presenting material in small steps with plenty of skills practice, asking lots of questions and stimulating discussion around learning, effective modelling, guided practice, frequent checks for understanding, children gaining a sense of achievement and success in the classroom, the use of scaffolds for difficult or complex tasks, the need for

extensive, successful, independent practice, and regular review of learning in order to develop well-connected and automatic knowledge (Rosenshine, 2012). Another point of reference for our delivery of the computing instruction is the 12 Pedagogy Principles from the National Centre for Computing Education (2023), in partnership with Raspberry Pi, which outlines the following examples of best practice: leading with concepts, teaching new concepts by first unpacking complex terms and ideas, creating projects, challenging misconceptions, using structures such as PRIMM (Predict, Run, Investigate, Modify, Make) when coding, working collaboratively, modelling extensively, using a wide variety of task and support types, bringing abstract concepts to life with real-world contexts and curricular links, reading code before writing it, using physical computing where we can and fostering program comprehension through practices such as Parson's Problems, where code is given out of order and children have to correct the algorithm.

Our use of the Purple Mash scheme supports us in utilising these principles to ensure the best outcomes we can give to our children. In addition, we measure the impact of our curriculum through the following methods:

- Comprehensive yet manageable teacher assessment in line with both the Purple Mash scheme of work and National Curriculum objectives (as well as our own additional unit of objectives on essential skills),
- An area for each year group to display work in which shows progression through the school, and
- Cross-curricular links that enable children to use their digital presentation skills in a variety of ways in multiple lessons.

The success of our curriculum will also be measured by how effectively it helps our pupils develop into well-rounded individuals who embody our school values and carry with them the knowledge, skills, and attitudes which will make them lifelong learners and valuable future citizens. We endeavour for pupils to have all six of our school's core values embedded and utilised by the time they leave St Anne's at the age of 11. These are: *kindness, respect, perseverance, honesty, faith and community*. When children leave St Anne's they are not only ready for their journey into Key Stage 3, but are well-rounded individuals with positive attitudes towards learning who use technology confidently, competently and perhaps most importantly with a deeply embedded sense of responsibility.

Last reviewed: Spring 2023 by J. Nixon

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