

St Margaret's CEVAP School



Computing Policy

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Author: Miss T Benjamin

Definition and Rational

We want our children to leave St Margaret's with the tools, skills and knowledge to safely interact and engage with an increasingly digital world and to aspire to use technology as a positive resource for themselves and their communities.

Computational thinking is a way of working to solve problems. This may involve using computers to help solve problems but could be solved simply using human brain power. It involves the breakdown of complex problems into smaller, manageable parts to be solved individually. This type of thinking requires similarities to other previously encountered problems to be identified and using this previous knowledge to help focus in on the important information. Next an algorithm (simple instructions) is developed to solve the problem. To think computationally, children have to apply creativity, previous experience and draw on the resources around them to successfully solve a given real world or simulated problem.

Aims

To encourage children to:

- develop their computational thinking skills which will benefit them throughout their lives by engaging in a range of exciting and enjoyable activities;
- engage with and explore new technology in the forms of hardware and software
- feel confident in their skills and abilities to use digital technologies safely and responsibly outside of a school setting
- use technology to enhance and enrich their learning in other areas of the curriculum
- use their creativity and past experiences to solve new problems
- work collaboratively and share ideas and expertise when solving new problems

Intent

Computing technology is changing at a rapid pace and increasingly plays a role in every aspect of our lives. At St Margaret's, we understand the impact on life chances associated with a technology gap and so put great importance on all of our children, regardless of background and financial circumstances, leaving us with the skills to participate in this rapidly-changing world. We aim to deliver a high-quality computing curriculum that provides children with a broad range of opportunities to develop their computational thinking skills in a manner that encourages creativity and to be competent in using computers and technology to assist them in as they move to the next level of education. This will be achieved with an ambitious, progression focused curriculum and an enthusiastic, computer literate teaching team who understand the importance that our children are prepared for a life surrounded by technology and digital advances.

Implementation

All children have access to the Early Years Foundation Stage Curriculum and Computing National Curriculum. At St Margaret's we use a long-term Computing curriculum plan to ensure that all aspects of the computing national curriculum are covered and that previous learning is built on.

Teachers plan and adapt the Teach Computing scheme of work to reflect on the abilities and prior knowledge of their class. Other units are adapted from resources from the Code.org and Twinkl Computing schemes to supplement and support the skills and knowledge taught through Teach Computing. Opportunities to use Computational Thinking are woven into aspects of the computing curriculum and the wider curriculum such as STEM Days and HOT (Higher Order Thinking) challenges. Children are given the opportunity to develop and experiment with different hardware and software to develop and use their creativity. "Children need to play to learn how to do computing" Paphet and Soloman, 1971.

These skills become embedded and built upon each year as children become more competent and independent with applying their previous learning both to their computing lessons and in their wider application into other areas of the curriculum.

Plans include the key knowledge and vocabulary for each area of the computing curriculum that all children should know and be able to use competently. Computational vocabulary is to be taught alongside each unit to enable children to articulate their computing learning clearly and precisely. Teaching of Computing at our school will be done largely as a whole class but maybe in smaller groups or individual work if required to meet the needs of individual children or groups.

Our Computing knowledge and skills are often linked to learning in other areas of the school curriculum, making it applicable and helping to embed their computer learning further.

We apply 12 pedagogical principles to our teaching of computing at St Margaret's.

- **Leading with concepts** – Using displays, regular recall and revision to support pupils in acquiring knowledge.
- **Unplug, unpack, repack** – Teach new concepts by first unpacking complex terms and ideas, exploring these ideas in unplugged and familiar contexts, then repacking this new understanding into the original concept.
- **Create projects** - Use project-based learning activities to provide pupils with the opportunity to apply and consolidate their knowledge and understanding.
- **Challenge misconceptions** - Use formative questioning to uncover misconceptions and adapt teaching to address them as they occur.
- **Structure lessons** - Use supportive frameworks when planning lessons, such as PRIMM (Predict, Run, Investigate, Modify, Make) and Use-Modify-Create.
- **Read and explore code** - first When teaching programming, focus first on code 'reading' activities, before code writing.
- **Make concrete** - Bring abstract concepts to life with real world, contextual examples and a focus on interdependencies with other curriculum subjects.
- **Add variety** - Provide activities with different levels of direction, scaffolding, and support that promote active learning, ranging from highly structured to more exploratory tasks.
- **Model everything** - Model processes or practices — everything from debugging code to binary number conversions — using techniques such as worked examples and live coding.
- **Work together** - Encourage collaboration, specifically using pair programming and peer instruction, and also structured group tasks.
- **Get hands-on** - Use physical computing and making activities that offer tactile and sensory experiences to enhance learning.
- **Foster program comprehension** - Use a variety of activities to consolidate knowledge and understanding of the function and structure of programs.

Thinking Computationally

Pupils at St Margaret's learn to utilise and apply their computational thinking skills into other areas of their learning as well as in their computing lessons. This is done by teaching through the four corner stones of computational thinking; decomposition, pattern recognition, abstraction, algorithms.

Attitudes

Through Computing we endeavour to foster the following qualities: -

Excitement, curiosity, perseverance, open-mindedness, self-discipline, problem solving, independence, adaptability, co-operation and an understanding of safe and responsible use of technology.

Equal opportunities

All children at St Margaret's are given equal opportunities in all areas of Computing. We monitor the attainment and engagement of all groups of children to ensure there are no patterns of attainment causing concern. Teachers are aware of children who may benefit from additional time to access computers and make allowance and additions for this where needed.

At St Margaret's we are very aware of the need to close the technology gap between those who have and have not got access to digital devices outside of school. We have a Digital Leaders scheme running in KS2 which is designed to provide opportunity for those who do not have these devices at home to learn some of the more practical and softer skills of computing. This includes learning how to put away and store devices correctly, logging on and find software and pre-teaching of certain software and skills that they can then use to support their peers in the classroom. The IT Computing Lead establishes and monitors the digital leaders and provides them with the necessary support to obtain these skills.

Progression

We recognise that our curriculum planning must allow for children to gain a progressively deeper level of knowledge, understanding and skill competency as they move throughout the school. Our Computing plans are progressive and enable teachers to adjust plans to meet the particular needs of individuals or groups of children. A school wide computing knowledge map help to ensure that children are revisiting topics and building on previous knowledge. Key vocabulary and terminology are explicitly taught by teachers in computing lessons. This is revisited at the start of units to ensure retention and to aid children with links to build upon prior learning in other units and previous year groups.

Records and Assessment

Assessment of children's development is made through ongoing teacher assessment and informs future planning. A record is kept of children's achievements in Computing, through teachers' own notes and our school record system (Learning Ladders). Progress and achievement in computing is reported to parents through end of year reports. The computing lead analyses and monitors assessments put on to learning ladders and tracks trends and patterns between Year groups and specific groups such as Multilingual, SEND and girls. This is supported by the Curriculum Lead who has the role of monitor progress in all subjects.

E-Safety

It is important that children are taught how to use the internet safely and responsibly from an early age. At St Margaret's this begin in Early Years and is continued throughout the school. Teachers deliver E-Safety at points throughout the Year that they think are best suited to their current class to reflect the current needs. A knowledge map is created by teachers using the Project Evolve platform to ascertain where the weaknesses of individual classes may be in the awareness of online safety and responsible use. Outcomes of the knowledge map are reviewed by the teachers and then session planned according to the class's weaknesses. This can be using Project Evolve resources or other materials teachers feel are appropriate. The school takes part in Internet Safety day in the Spring term where every child engages with some aspect of E-Safety throughout the day.

Monitoring

The Computing curriculum is monitored by the Computing Curriculum co-ordinator through observation of teaching, monitoring of medium-term plans, staff meetings, children's work, pupil voice and analysis of data.

Resources

Every classroom has access to resources that are relevant to their year group, however shared resources are situated in other locations. Laptops, digital cameras, VEX Bots, iPads, Chrome books and Micro:Bits. Equipment is monitored, maintained and restocked by the IT co-ordinator, Computing Curriculum Coordinator and the IT technician.

Pupils are taught how to locate and store resources properly. Teachers make decisions, based on the age and competency of pupils, in relation to whether the teacher, the pupils under the guidance of an adult, or the pupils independently, should collect and replace resources. Teachers are responsible for making sure that all equipment is left charging and secured at the end of the session and that cabinets are locked and the keys returned to the key safe. The IT co-ordinator is tasked with checking the storage and security of resources at the start and end of the day.

The Learning Environment

Classrooms should display useful content from the current unit or areas of the curriculum that the children will continually need. This may include key vocabulary and learning content. Resources for the current unit should be appropriately accessible. All classrooms should have the knowledge organiser displayed for their current unit in the classroom which has been provided by the Computing Curriculum Lead and is available from the Staff Shared Drive. Children should know how and where to find the information needed to access and log on to various devices in school. Teachers can judge whether this be best stored by the teacher or independently stored by the children for example in their trays or in a workbook.

Curriculum enrichment

We ensure that children have access to a wide range of educational experiences. We may invite visitors, speakers and companies to lead workshops with the aim of inspiring a wider interest, engagement and future career using technology. Homework also may be used to encourage family involvement in computing learning and discovery and allow children to embed and practise a number of basic computing skills covered in lessons. Teachers plan to make use of computers in their wider curriculum where children are given the opportunity to experiment with their computing skills whilst continuing their learning in another subject area. This may include creating e-books about their learning, researching information, formatting and word processing a piece of writing, composing a piece of digital music or creating digital art.

Each unit of Computing has a corresponding career that is designed to both broaden the career horizons of the children and link the knowledge and skills they are learning to an actual career. Through the links embedded by the Computing Curriculum Lead, children at St Margaret's will be exposed to at least 39 different technology related careers just through their computing lessons alone.

Impact

We aim for computing at St Margaret's to be fun, engaging and high quality; providing opportunities for all children to reach their potential. We provide children with the knowledge and skills for a life in an increasingly growing and changing technological world. We inspire them to embrace and experiment with new technology in a safe and responsible way.