

Padbury Statement of Intent for Computing

Vision:

At Padbury CE School our vision is to for children to shine in everything they do and to share their skills and knowledge with others to enable everyone to succeed. We encourage pupils' curiosity to enable them to confidently explore and discover the technological world around them. Through our practical and enjoyable curriculum, we aim to inspire and excite our children and foster a thirst for this knowledge. We believe that computational thinking is vital in helping children to solve problems, design systems, and understand the power and limits of human and machine intelligence. Furthermore, it is a skill that empowers, and one that all pupils should be aware of and develop competence in. Pupils who can think computationally are better able to conceptualise, understand and use computer-based technology, and so are better prepared for today's world and future.

Computing teaching and learning at Padbury CE School is good when 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.
- Use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concerns.

Aims and Purposes of Computing:

“A high-quality computing education which equips pupils to use computational thinking and creativity to understand and change the world. 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. Computing ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace.” National Curriculum 2014

Computing allows pupils to engage in an increasingly technological world. Our aims are to fulfil the requirements of the National Curriculum for Computing whilst also providing enhanced collaborative learning opportunities, engagement in rich content and supporting pupil's conceptual understanding of new concepts which support the needs of all our pupils. At the core of computing curriculum are 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, we intend for our children to use information technology to

- create programs, systems and a range of content.
- ensure that pupils become digitally literate and digitally resilient
- enable them to use, and express themselves and develop their ideas through, information and communication technology



- develop their ideas through, information and communication technology at a suitable level for the future workplace and as active participants in a digital world

The aims of our Computing Curriculum are to develop pupils who:

- Are responsible, competent, confident and creative users of information and communication technology.
- Know how to keep themselves safe whilst using technology and on the internet and be able to minimise risk to themselves and others.
- Become responsible, respectful and competent users of data, information and communication technology.
- Can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems.
- Can analyse problems in computational terms and have repeated practical experience writing computer programs in order to solve such problems.
- Can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation.
- Become digitally literate and are active participants in the digital world.
- Are equipped with the capability to use technology throughout their lives.
- Understand the importance of governance and legislation regarding how information is used, stored, created, retrieved, shared and manipulated.
- Have a ‘can do’ attitude when engaging with technology and its associated resources.
- Utilise computational thinking beyond the Computing curriculum.
- Understand the E-Safety messages can keep them safe online.
- Know who to contact if they have concerns.
- Apply their learning in a range of contexts, e.g. at school and at home.
- Know where to locate the CEOP button and how to use it.

Curriculum Intent for Computing across Foundation Stage, Key Stage 1 and Key Stage 2

INTENT

Computing is an integral part of the national curriculum. It has become part of the way we all work and entertain ourselves. Almost everything we do at school now involves the use of computing; online lessons, research, presentation, recording, video and imagery, teaching plans and resource materials; lesson delivery via either interactive whiteboard or visualiser; communication by e-mail, document distribution and storage, assessment information analysis and production and editing of reports.

We aim for our children to be digitally literate. Through teaching computing, we facilitate children’s participation in a world of rapidly-changing technology. We enable them to find, explore, analyse, exchange and present information. It is our intention that our children become responsible users of technology and can use the internet respectfully and safely; developing the necessary skills for using information in a non-discriminating and effective way. This is a major part of enabling children to be confident, creative and independent learners.

Computing encompasses three key areas:

- i. computer science (programming and understanding how digital systems work);
- ii. information technology (using computer systems to store, retrieve and send information); and
- iii. digital literacy (evaluating digital content and using technology safely and respectfully).

EYFS

In the Foundation Stage, our young digital citizens develop a greater understanding of the world by recognising a range of technology that is used in their homes and school. Through experimenting with a range of different equipment such



as iPads, chromebooks, cameras, microphones, digital story boxes and mechanical toys, the children will begin to speculate on why things happen or how things work and interact with age appropriate computer software.

Understanding the World (UW) is one of the four specific areas of learning in the EYFS framework. It involves guiding children to make sense of their physical world and their community through opportunities to explore, observe and find out about people, places, technology, and the environment.

Children's basic needs for information and the development of communication skills are key to their success in life. Engagement with computing achieves the best outcomes when children's encounters with computing are enhanced by adults. When used across all areas of the Early Years Foundation Stage, it will offer opportunities for children to:

- Work as part of a group, taking turns and co-operating.
- Increase their vocabulary through conversations and discussions.
- Develop their creativity and imaginative play.
- Increase their knowledge and understanding of the world.
- Include activities that involve investigation, exploring and solving problems.

Key Stage 1 and Key Stage 2

In KS1 and KS2, computing is taught through all three strands in each year group, but the subject knowledge becomes increasingly specific and in-depth, with more complex skills being taught, thus ensuring that learning is built upon. For example, children in Key Stage 1 learn what algorithms are, which leads them to the design stage of programming in Key Stage 2, where they design, write and debug programs, explaining the thinking behind their algorithms.

Computational knowledge and understanding is presented in a variety of ways using skills taught in English, mathematics, science, design & technology and art to develop more meaningful learning experiences. We believe children should be taught computing content through a variety of hands-on learning experiences to develop them as technologists. The teaching of computational vocabulary is key for our children.

We endeavour to ensure that the Computing curriculum we provide will give children the confidence and motivation to continue to further develop their skills into the next stage of their education and life experiences.

We believe that levels of computing capital (cultural capital and social capital) can be increased by:

Engaging parents

- Involving parents in children's computing education. This could be via collaborative homework or initiatives that work with parents directly.
- Letting parents know it's OK not to know the answers to everything children ask about computing, and promoting "I don't know, let's see if we can find out".

Revealing the relevance of science

- Exploring how a particular area of the STEM curriculum is relevant to real life.
- Highlighting the different careers that are related to topics taught in school.

Challenging popular stereotypes

- Presenting STEM as 'normal,' not 'hard'.
- Challenging gendered attitudes around appropriate career choices for boys and girls.

Being aware of language

- Introducing the variety of computing-related jobs from an early age. For example, our Key Stage 1 and 2 workshops cast children in the role of 'structural engineer' and build their understanding of subject, context, and career possibilities.
- Highlighting that the English language is inherently gendered, and the role this can play in defining children's norms and identities.



Creating different opportunities for children to explore STEM

- Providing opportunities for children to explore STEM at museums, galleries and science centres.
- Increasing contact with people who work in STEM jobs by bringing them into classroom to talk about their work. This might include parents.

IMPLEMENTATION

Computing is taught using a blocked curriculum approach. This ensures children are able to develop depth in their knowledge and skills over the duration of each of their computing topics. Teachers use the Kapow scheme as a starting point for the planning of their computing lessons, these are then adapted appropriately to meet the needs of the children.

We have class sets of Chromebooks in KS2 to ensure that all year groups have the opportunity to use a range of devices and programs for many purposes across the wider curriculum, as well as in discrete computing lessons. Employing cross-curricular links motivates pupils and supports them to make connections and remember the steps they have been taught.

The implementation of the curriculum also ensures a balanced coverage of computer science, information technology and digital literacy. The children will have experiences of all three strands in each year group, as well as online safety. but the subject knowledge imparted becomes increasingly specific and in depth, with more complex skills being taught, thus ensuring that learning is built upon.

IMPACT

The implementation of our computing curriculum ensures that when children leave Padbury CE School, they are competent and safe users of computers with an understanding of how technology works.

They will have developed skills to express themselves and be creative in using digital media and be equipped to apply their skills in Computing to different challenges going forward.

By the end of Reception most children will attain the Development Matters outcomes for 5 yr olds

- Technology: children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes.
- Being imaginative: children use what they have learnt about media and materials in original ways, thinking about uses and purposes. They represent their own ideas, thoughts and feelings through design and technology, art, music, dance, role-play and stories.

and will be able to:

- Show an interest in computing
- Know how to operate simple equipment
- Find out about and identify the uses of everyday technology and use information and communication toys to support their learning.

By the end of Year 2, most pupils will be able 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.

By the end of year 6, most children will be able 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.

Safeguarding

Safety is paramount and all forms of technology should be checked out by adults before being used with children. We have ensured our child protection policies cover the use of technology by adults and children within the school. Appropriate filters and monitoring systems are in place to protect learners from potentially harmful online material. All adults, pupils and parents have read and signed the user agreement.

Special Educational Needs and Equality

Specialised computing equipment for children with SEN will be purchased from the SEN Budget and will be maintained by TIO.

Lesson plans are to be differentiated to ensure equality of access to all children. For children with special needs, tasks may have to be broken down into small steps, giving them achievable goals, and activities should reinforce the pupil's understanding of content covered previously. In this way all children will be enabled to achieve their full potential.

Padbury CE School is committed to promoting Disability Equality and equality of opportunity for pupils with learning difficulties. When planning and teaching Computing staff will make reasonable adjustments to promote equality of opportunity for disabled and nondisabled pupils. This could include;

- allocating adult support
- providing additional support materials (e.g. visual aids such as photographs, Makaton symbols, concept boards)
- providing alternative resources e.g. switch technology which is easy to manipulate, use of alternative materials for pupils with sight or hearing difficulties.
- modifying tasks (e.g. working on the same objectives but with an alternative choice of media, recording work in different ways such as with a digital camera/ verbally/ with a tape-recorder) ■ See also 'SEN Policy

Wider impact of Computing

'Computing education must enable young people to continue to keep up with the pace of technological change so that they can remain effective, well-informed and safe citizen' (After the reboot: computing education in UK schools – Royal Society)

Computing is open to all children, of whatever age, gender, ethnic origin, ability and social background because it teaches children skills that will be essential for the modern world. Care is taken to avoid cultural or gender stereotyping when selecting resources and planning activities. Consideration should be given to the use of technology in different cultures. We will strive to celebrate computing achievements from around the world regardless of nationalities.



Spiritual Development in Computing - Computing education provides opportunities for reflection of awe and wonder about the achievements of ICT today and possibilities for the future. Pupils have the opportunity to reflect on issues – such as how computers can sometimes perform better in certain activities than people. Pupils’ spiritual development, their sense of self and will to achieve is promoted by teachers praising their contributions and endeavour. They can:

- Reflect on their own and others’ lives and the impact computer science has on this.
- Discuss the power and limitations that computing can have – particularly on individual’s beliefs.
- Develop self-esteem through the presentation of work to others.
- Explore how ideas in computing have inspired others.
- Experiment with and trust their own beliefs and ideas.

Moral Development in Computing - Moral education in computing provides opportunities for pupils , enabling them to reflect on the possible consequences of different actions and situations. It can raise issues and moral dilemmas, such as whether it is morally right to have computer games whose aim is killing and violence, reflecting on rules around these eg age. They also have opportunities to discuss whether it is right that some people in this country and in other countries do not have access to the internet; as well as debating the sharing/selling of personal data and the consequences. Pupils:

- Are taught good etiquette when using digital technology, including mobile devices, with due regard to e-safety.
- Are encouraged to respect other people’s views and opinions.
- Develop respect in the use of digital equipment and its impact on the environment – ink and paper wastage.
- Explore moral issues around the use of digital technology – copyright and plagiarism.
- Express their own responses and opinions of the work of others with a justification for their view.

Social Development in Computing - Social education involves collaborative work which encourages social development. Computing can also help pupils to express themselves clearly and to communicate. Pupils:

- Are encouraged to assist each other when problem solving.
- Use appropriate social behaviours and to interact as part of a caring community.
- Are taught good practice and respect in the use of social networking.
- Work collaboratively on musical projects.

Cultural Development in Computing - Cultural education involves breaking though linguistic and cultural barriers through e-mailing or video contact across the world New opportunities to communicate through different media are discussed – such as social media – are created. Pupils have opportunities to explore aspects of their own culture and they can also begin to make connections between different cultures. Pupils:

- Use digital technology sensibly in the classroom and are encouraged to do the same at home.
- Are empowered to use and apply their computing skills to the wider curriculum.
- Respect and develop an awareness and appreciation of how differing cultural, spiritual and religious views might differ towards the use of digital technology.

