Winslow Church of England School

Statement of Intent for Computing

Vision

At Winslow Church of England School, our vision is 'Let your light shine'. The rainbow symbolises God's unconditional love for each individual. We seek to reflect that light in all we do: in our community, both local and wider, our communication, both word and action, with curiosity and courage, and with care and compassion for everyone, inspiring a love of learning.

Intent

Computing at Winslow CE School intends to develop 'thinkers of the future' through a modern, ambitious and relevant education in computing. We want to equip children to use computational thinking and creativity that will enable them to become active participants in the digital world. It is important to us that the children understand how to use the ever-changing technology to express themselves, as tools for learning and as a means to drive their generation forward into the future.

Whilst ensuring they understand the advantages and disadvantages associated with online experiences, we want children to develop as respectful, responsible and confident users of technology, aware of measures that can be taken to keep themselves and others safe online.

Our aim is to provide a computing curriculum that is designed to balance acquiring a broad and deep knowledge alongside opportunities to apply knowledge and skills in various digital contexts. Beyond teaching computing discreetly, we will give pupils the opportunity to apply and develop what they have learnt across wider learning in the curriculum. Our computing scheme is project-based, with most unit's building up to and culminating in a digital creation with cross-curricular links, including, but not exclusive to:

EYFS: Achievements presentations and digital monster creation

Year 1: Digital art and eBooks

Year 2: Stop-motion animation

Year 3: Video presentations and wiki-pages

Year 4: Developing educational games and blog creation

Year 5: Website creation and experimenting with virtual reality

Year 6: Publishing a yearbook and creating television advertisements

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

The curriculum aims to equip our children 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 3

strands: computer science (programming and understanding how digital systems work), information technology (using computer systems to create, store, retrieve and send information) and digital literacy (evaluating digital content and using technology safely and respectfully), with the aims of the curriculum reflecting this distinction. From Reception to Year 6, experiences in computing and the wider curriculum are planned to develop children's computational thinking skills.

A key part of implementing our computing curriculum is to ensure that safety of our pupils is paramount. We take online safety very seriously and we aim to give children the necessary skills to keep themselves safe online. Children have a right to enjoy childhood online, to access safe online spaces and to benefit from all the opportunities that a connected world can bring them, appropriate to their age and stage.

The aims of our computing curriculum are to develop children 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.

Implementation

At Winslow CE School, computing is taught every week using the 'Switched On' scheme published by Boost. Children study computing in blocks, and the content of each block is outlined in the school's Computing Knowledge and Skills Progression Map. This approach enables a project-based approach to computing and supports a greater depth of understanding throughout the focused teaching block.

Knowledge and skills in the computing curriculum are mapped across each topic and year group to ensure systematic progression in alignment with the National Curriculum. Freedom for teachers to develop and adapt computing units within the framework of the progression map leads to rich links with engaging contexts in other subjects and topics, while still ensuring systematic coverage of objectives.

Key knowledge and skills build towards mastery of specific end point objectives at the end of each key stage (in Y2 and Y6) with the knowledge and skills taught in EYFS focusing largely on computational thinking and preparing pupils to work towards the National Curriculum's programme of study in Year 1.

After completing a unit, learners complete a brief key knowledge quiz to assess and reinforce their retention and understanding of core facts and concepts. They then write a summary of what they know according to the key knowledge statements identified on the progression map. Teachers support the children and scaffold this 'knowledge summary' as appropriate, according to the children's age group, as well as individual needs. This process is used to further consolidate the key knowledge of the topic and each strand of knowledge included in the outcomes is ticked or highlighted.

Our computing progression framework ensures a balanced coverage of the three computing strands (computer science, information technology and digital literacy). The children work on all three strands each year. As they progress through the school, children build on their prior learning within each strand, covering new or deeper knowledge and developing their technical skills. Within all sequences of lessons, teachers plan a phase of progressive questioning which extends to and promotes the higher order thinking of all learners.

Questions initially focus on the recall or retrieval of knowledge, and help to scaffold computational thinking skills, such as pattern recognition. Questions then extend to promote application of the knowledge in a new situation and are designed to promote independence in analytical thinking.

The relevant, context-embedded computing experiences through which our knowledge- engaged curriculum is taught will benefit learners in secondary school, further education and future workplaces. From research methods, use of presentation and creative tools and computational and critical thinking, computing at Winslow CE School gives children the building blocks that enable them to pursue a wide range of interests and vocations in the next stage of their lives.

We use a range of hardware to support the teaching and learning of computing, including our computing suite, microphone and headphone sets for recording, wall-mounted SMART boards, selection of laptops in each year group and class iPads. We also have programmable robots (Blue-bots) for EYFS and KS1 and two sets of Micro:Bits for KS2. This ensures 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.

At the start of each computing unit, teachers seek to link new learning to previous learning in line with the whole-school knowledge and skills progression map, by reviewing what the children already know (part of the 'KWL' approach). Teachers also identify what children would like to learn, to enable units to be adapted to take account of children's interests, as well as to the needs of the class. Prior learning is identified on topic working walls, which are used alongside the display boards in the suite to support and celebrate learning, and to display key knowledge and vocabulary.

In each lesson, children are guided towards accomplishing the learning objective through the use of success criteria, which are outlined whenever a hands-on activity is introduced. Work and understanding is reviewed by children during the lesson, as well as at the end, supporting teachers and students to identify individual target areas. Lessons are planned to enable children to acquire key knowledge alongside the development of key skills, and outcomes of work will reflect this.

As well as during the lessons, the knowledge and skills that children have been taught is also reviewed by the pupils at the end of each unit, as they complete a self-reflection activity, alongside the end of unit test. This is checked by the teacher against the progression framework, allowing opportunities for timely intervention where necessary.

Teachers' own use of computing in lessons is also an essential part of preparing engaging, fast moving, motivating lessons for pupils. The Computing Lead will keep teachers up to date on the

latest digital teaching tools; individual teachers then need to implement these tools into their lessons wherever beneficial.

Computing in EYFS

The computing curriculum is introduced in the EYFS, as a foundation for work in KS1. In the Early Years, our computing curriculum is entirely cross-curricular, and centres on teaching computational thinking skills. These form a core part of our activities across the areas of learning, largely without the need for digital devices. The EYFS computational thinking skills are:

- Tinkering (Playing and exploring)
- Making (Making things, checking and fixing things)
- Collaboration (Playing and working together)
- Persevering (Not giving up)
- Logic (Anticipating/predicting and explaining = logical reasoning)
- Pattern (Grouping things, comparing, spotting similarities and differences, working out rules)
- Abstraction (Naming and labelling, working out what is important, sticking to the main theme, ignoring what is not important, creating a summary)
- Algorithms and Decomposition (Responding to instructions, ordering things, sequencing things, introducing storylines, working out different ways to do things, breaking problems down into steps)

The children also experience a range of digital devices and uses of information technology, as well as building foundational knowledge of digital literacy. In Rainbows Preschool, the children regularly use programmable pegs to record, store and playback sound as part of English provision. Across EYFS, pictures and videos are often shared, demonstrating IT used beyond school. Children are given the opportunity to explore programming using Blue-bots and also through coding projects for pre-readers on the iPads.

Throughout the year, children in Reception are supported to create drawings, recordings, photographs and other digital content on iPads and on the interactive whiteboard, as well as to access content using QR codes. Digital literacy and online safety knowledge is developed through age-appropriate stories such as Digiduck, and is reinforced through participation in whole-school events such as Safer Internet Day.

Planning

Boost: Switched On Computing

The school uses the updated Boost: Switched On Computing scheme as a starting point to deliver the national curriculum programme of study. Our implementation of this scheme supports clear progression of skills from Years 1 to 6, with EYFS provision focused on computational thinking skills and on reaching the starting points for Year 1, preparing the children for the work that will be covered in the following years.

The computing scheme supports teachers of all levels of experience as it provides software overviews, CPD videos and detailed planning with the basis for lesson slides. Throughout the scheme, online safety and digital literacy is embedded, even within the other strands, to ensure the safe and responsible use of technology is at the centre of all teaching and learning. A range of new and free software has been installed to enable delivery of our curriculum, and software alternatives

are indicated on planning. Planning documents and lesson resources have been saved and organised by year group and unit on the Shared Drive.

Each lesson in a unit is planned to cover one or two specific knowledge statements, according to the computing knowledge and skills progression map. Skills that are relevant to that lesson are also planned for and evident in the slides for that lesson.

Lesson slides are designed to be accessible to all children, as well as to avoid cognitive overload. Lesson slides are used by the teacher to support the teaching, as well as to convey key information and instruction to the children.

Teachers adapt lesson slides according to what is stated on the progression map for computing according to the term and year group. Using the scheme resources as the basis for lesson slides supports planning processes and ensures consistency. The teacher's role is not to facilitate the information on the slides, but to use them to support their teaching and to convey key information and instruction in a way that is visually accessible to all learners.

National 'Safer Internet Day' is celebrated every year. This includes an assembly for each Key Stage related to the E-safety theme, led by the Computing Leader, and resources disseminated for follow up work in class. Alongside this there are communications to parents in line with national guidance on safer internet use at home, either through Class Dojo or Parent Mail.

Resources

Computing Suite

We also have 30 desktops to support independent learning in the computing suite, which will allow for independent learning as well as meeting the demands for the new programme of learning.

iPads

Each teacher has a class iPad for assessment purposes which the children can access for their own learning.

Classroom Computers

There is a collection of laptops in each year group. These machines are networked and have access to the shared drive for planning and preparation.

Printers and Photocopiers

The ICT suite has a photocopier linked to the desktops to allow pupils to print off their work.

Interactive Whiteboards

Each classroom has an interactive board linked to the desktop computer.

Other Resources to support the curriculum

- Micro:Bits
- Blue-bots
- Headphones
- Microphones
- Webcams with microphones for classroom desktop computers
- Microsoft Outlook

Impact

Our approach to the curriculum provides fun, engaging and meaningful learning for all pupils, in which the children understand not only the content that is taught but the opportunities offered to them by their computing education. The implementation of our computing curriculum ensures that when children leave Winslow CE School, they are competent and safe users of IT with an understanding of how technology works.

The impact of our curriculum and the quality of children's learning is evident in their work, which is shared, published and celebrated on Seesaw (an online platform) and in their topic books - using photographs and QR codes to showcase digital work. Monitoring of these outcomes, alongside key knowledge quiz results, and discussions with teachers and learners, allows the subject lead to ensure the knowledge-engaged curriculum taught is being learned and retained by all pupils. All this information also feeds into teachers' future planning and enables assessment of pupil's knowledge and skills.

Through cross-curricular uses of computing in other subjects, teachers are able to revisit misconceptions and knowledge gaps in computing in tandem with other curriculum areas. This supports varied paces of learning and ensures all pupils make good progress.

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 ICT
- Know how to operate simple equipment
- Complete a simple program on the computer and / or perform simple functions on ICT equipment
- Find out about and identify the uses of everyday technology and use information and communication toys to support their learning.

At Winslow CE School, children in both key stages are taught about the benefits of the knowledge and skills they are learning, as well as their application in real life contexts and professions.

By the end of Year 2, most pupils will attain the national curriculum outcomes for 7 year olds and 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 attain the age related expectations for 11 year olds and 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.

Assessment

Formative Assessment

Prior knowledge: Children's existing knowledge of the topic, and the key related knowledge from previous year groups, is checked at the beginning of each unit as part of the KWL process.

Self-assessment: The learning objective for each lesson is shared with the children, in the form of an 'Let's learn' statement at the beginning of each lesson – this is stated at the beginning of lesson slides. This guides the learning and along with success criteria, which are shared prior to 'Let's do' tasks, this enables pupils to self-assess their mastery of key knowledge and skills at the end of each lesson.

Further self-assessment occurs as children are taught to debug their own programs, using logical reasoning to explain simple algorithms (including their own), and detect and correct errors in both algorithms and programs. In doing this, they are continually assessing their own work, and learning how to improve. There are also many opportunities to evaluate or review the digital artefacts they create and develop.

Peer-assessment: The ideas of self-assessment suggested above translate naturally into peer assessment, with pupils working with a partner to review, and help correct, algorithms and programs, or provide critical, constructive feedback on digital content.

Progressive questioning: Pupils' knowledge of the concepts covered by the programme of study may not be immediately apparent in the work they produce. The use of progressive questioning allows teachers to assess and develop a learner's grasp of concepts.

Discussion with peers: Encouraging pupils to discuss open questions with their peers can be effective in allowing them to focus on what they've learned, rather than only on what they've done. Discussion and debate on our online platforms, such as Seesaw, is also a powerful way to illustrate the opportunities offered by computer networks for communication and collaboration.

Seesaw

Children's computing work should be evidenced on Seesaw, our online journal, with an overview of learning and outcomes to be showcased in topic books.

Summative Assessment

The key knowledge and skills stated on the computing progression map are colour coded to show how they relate to the objectives from the National Curriculum programme of study.

Children's attainment of these objectives are assessed by the teacher based on the learner's outcomes, results of their key knowledge test and their final summary paragraph ('What I Now Know') produced at the end of each unit of work as part of the KWL process. This is checked against the progression framework and informs focused consolidation where necessary. As well as the above assessments, teacher and pupil voice interviews are undertaken to provide a clearer picture of the impact of teaching and learning. The aim of this monitoring is to ensure that tasks have been adapted to meet the needs of different learners, and that the pre-identified key knowledge and skills have been taught and acquired/developed.

Special Educational Needs and Equality

Specialised computing equipment for children with SEND will be purchased from the SEN Budget.

Lesson are adapted 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.

Winslow 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 SEND Policy

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.

SMSC

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 e.g. 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.