River Primary School
Computing Policy

Our school policies reflect our commitment to an inclusive, creative and exciting curriculum, based around high quality teaching and learning.

PURPOSE OF STUDY

A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science and design and technology, and provides insights into both natural and artificial systems. 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. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also 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 and as active participants in a digital world.

CURRICULUM DRIVERS IN COMPUTING

Collaboration: Pupils work together, sharing and developing ideas for a range of different purposes such as: presenting data and information, designing and making multimedia presentations, composing music, word processing, photography and coding. Throughout the development stage, communication is a key tool for success. Pupils learn how to engage in a collaborative dialogue, listening to and acting upon each other's thoughts and ideas, discussing the next steps in their learning, working together to achieve the end goal and overcoming any issues that may arise along the way. As a result, they develop positive relationships with their peers and learn how to empathise with and accommodate the thoughts and feelings of those around them. Through coding, children develop their problem-solving skills, by creating algorithms and debugging code. Ensuring children become digitally literate through regular opportunities across the curriculum will ensure that they are suitably prepared for the future workplace and ready to become active participants in an ever-changing digital world.

Initiative: Pupils use their computing experiences to navigate the online world. They make informed decisions about online content and information, learning how to identify fake information, developing an understanding of terms such as misinformation and disinformation, and employing strategies for how to keep personal information safe online. Developing competence in coding for a variety of practical and inventive purposes, including the application of ideas within other subjects, enables children to generate and act on their own ideas. Children will of course develop resilience and will need to make decisions and modify approaches when technical setbacks occur. When presenting data and information or designing and making multimedia presentations, they make their own decisions about the style, design and layout of their work, making sure to carefully consider the audience and purpose of their project before publishing the final version. This gives them the opportunity to develop their creatively, have ownership of their learning and take pride in the work that they produce.

Diversity: Children are taught to recognise and understand their responsibilities towards themselves and others through regular e-safety teaching. This includes our whole-school focus on e-safety during Safer Internet Day. The children learn how to connect with others safely and respectfully, understanding the need to act within the law and with moral and ethical integrity. We encourage children to develop a tolerance towards each other's ideas and articulate their thoughts and feelings. Through the specific disciplines of information technology, digital literacy and computer science, children develop a sense of excitement and curiosity about the digital world – the curriculum providing them with a wide range of opportunities to explore the many different guises of computing in the 21st century. The children also have the opportunity to experience computing and apply their skills across the curriculum, allowing them to embed their skills through a variety of different contexts. This can be illustrated through a number of examples such as: the use of word processing programs when presenting information related to topic work or English; the use of iPads and tablets to engage, encourage and monitor the children in reading; the use of TTRS and other online games and programs to promote and develop skills in mathematics; data-logging equipment to monitor, record and organise data from investigations in science; and the close relationship between online-safety and the PSHE curriculum.

AIMS

The national curriculum for computing aims to ensure that all 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

SUBJECT SKILLS

In lessons, we use an innovative project-based approach to teaching computing which encourages pupils to be critical thinkers, problems solvers and computational thinkers. This approach deepens children's knowledge of computing so they can creatively apply their learning across the curriculum in a personalised and accessible way. Skills are built through a sequence of lessons which follow the DARES structure:

D - Design: Pupils start to discuss the desired outcome for their project and are given time to tinker with the software before planning what they will do to achieve their outcome.
A - Apply: Pupils are given the opportunity to create, make and produce content using the app or software explored in the Design lesson(s)
R - Refine: Pupils spend time considering ways to modify and improve their projects to get the best results possible.

E - Evaluate: Upon completing their desired outcome, pupils are given the opportunity to reflect and consider how effectively they have achieved their goal.

S - Share: Learners are given the opportunity to publish and exhibit their work embedding skills from the Digital Literacy curriculum.

The progression document for computing highlights key vocabulary to be explicitly taught within each unit of work. Teachers model the use of this vocabulary within lessons and encourage children to use this vocabulary during whole class and paired discussion as well as when planning and evaluating their projects. Each lesson begins with the teaching of new vocabulary and retrieval opportunities to review and revisit prior knowledge, skills and vocabulary taught.

Within lessons, pupils have access to a range of computing resources including both hardware and software. Pupils learn to use a range of hardware including ipads, laptops, micro-bits and Beebots. Software is selected to best meet the skills to be learnt and specific needs of learners. This includes software such as Keynote and Chatterpix for animation; Scratch Jr and Microbits for programming; Microsoft Word and Clicker for wordprocessing.

Pupils learn, use and apply computing skills to create work which is published and shared. For instance, pupils generate questionnaires in Microsoft Forms, which are shared and then used to gather data; they use the line animation tool in Keynote to create an animated and annotated drawing of the digestive system to explain the process to younger pupils and they use Scratch to create their own video game.

Computing in EYFS

Whilst there is not a specific technologies area within the EYFS framework, we continue to provide opportunities for our children to use technology to solve problems and produce creative outcomes. It is important in the Foundation Stage to give children a broad, play-based experience of Computing in a range of contexts, including outdoor play. Computing is not just about computers. Our early years learning environment features Computing scenarios based on experience in the real world; such as role play. Children gain confidence, control and language skills through opportunities to explore using non-computer based resources such as metal detectors, controllable traffic lights and walkie-talkie sets. Recording devices can support children to develop their communication and turn taking skills. Allowing children the opportunity to explore technology in an often child-led way, means that not only will they develop a familiarity with equipment and vocabulary, but they will have a strong start in Key Stage 1 Computing and all that it demands.

Technology in the Early Years can mean:
- taking a photograph with a camera or tablet
- playing games on the interactive whiteboard
- exploring an old typewriter or other mechanical toys
- using a Beebot

SUBJECT CONTENT

Key stage 1

Pupils should be taught about:

- 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

Our curriculum includes the theme of understanding algorithms in order to create and debug simple programs in Year 1.

Our curriculum includes the theme of recognizing the use of technology beyond school, and to use this to purposefully create, organise, store, manipulate and retrieve digital content in Years 1 and 2.

Our Curriculum includes the theme of using technology safely, by keeping information private and identifying where to go for help and support in Year 1 and 2.

Key stage 2

Pupils should be taught about:

- 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

Our curriculum includes the theme of designing, writing and debugging programs that accomplish specific goals in Year 3. These skills are then developed by solving problems in programs in Years 4 and 5.

Our curriculum includes the theme of understanding computer networks including the internet in Years 4 and 6.

Our Curriculum includes the theme of selecting, using and combining a variety of software on a range of digital devices in Year 3. These skills are then developed to design and create a range of programs in Years 4, 5 and 6.

Our Curriculum includes the theme of using technology safely, respectfully and responsibly, and recognising acceptable and unacceptable behaviour, across Key Stage 2.

Use of Key Questions
The use of key questions at the beginning of computing lessons, is one of the ways we engage children with their learning; giving them an opportunity to make connections with their prior knowledge. At the end of a lesson, teachers will return to the key question, considering the improvements children have made with their responses.
Hinge Questions
During Computing lessons, hinge questions are planned at specific times to enable teachers to assess the pupils understanding and thinking at that point. Following this, the responses to the hinge question will guide the teacher's next step in the lesson – this may involve a recap or moving onto the next stage in the learning sequence.

CROSS-CURRICULAR LEARNING
We approach learning through cross-curricular themes so that children make links and see the relevance of their learning in different subjects. More detail can be found in our Curriculum Policy and on our school website www.river.kent.sch.uk.

Consistent with our curriculum aims, we identify learning by subject so children know when they are learning computing. This ensures that the integrity of the subject is not degraded and children acquire the underlying knowledge needed to access the subject in later years, including the acquisition of specific subject vocabulary.

ASSESSMENT AND REPORTING
Assessing and Reporting
Assessment of Computing at both KS1 and KS2 is based on teacher assessment. Pupils will be assessed, and their progression recorded in line with the school's Assessment Policy. Teachers make judgements by assessing the answer to the inquiry question alongside the progress made against key learning objectives throughout the unit. Assessment will be undertaken in various forms, including the following:

● Talking to pupils and asking questions
● Discussing pupils' work with them
● Marking work against the key learning objectives
● Pupils' self-evaluation of their work
● Formative assessment, which is carried out informally throughout the year, enables teachers to identify pupils' understanding of subjects and inform their immediate lesson planning.

Reporting

Teachers enter assessment data into the schools reporting system twice a year.

Parent consultations provide a formal opportunity to discuss both progress and attainment and parents also have the opportunity to have a look at the learning that children have been doing in Computing, through their books. Pupil annual reports shared with parents in July, provide a formal report of attainment in Computing.

<mark>Subject Specific Assessment</mark>

In Computing, children will be assessed for key knowledge, understanding and skills in the three main strands of the National Curriculum for Computing (2014). These strands are: 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). The progression document that details the expectations in each year group ensures that teachers understand what has been taught previously, what they need to teach in their year group and what will be taught next. It is also a tool for identifying any gaps in pupils' learning and allows teachers to plan for this effectively. Alongside the core values of these three strands, pupils' knowledge and understanding of online safety is also regularly assessed to ensure that all pupils have a secure understanding of how to use technology in a responsible manner. Pupils' skills to recognise risks online, to be critically aware of the materials and content they access online, along with guidance on how to accurately validate information accessed via the internet will be regularly assessed through discussion, pupil reflections in books and multiple choice. Teachers will be reactive to current online safety concerns.

Subject Leader Evaluation, overview of Assessment and Monitoring

To ensure best practice, the subject leader has been involved in curriculum review and has worked with the teaching team to ensure that our current curriculum is well-designed to include all the required aspects of computing, whilst making it relevant to our children in our context. In taking this approach, we capitalise on the locality and learning from direct experiences as far as possible.

To evaluate the impact of the curriculum and the quality of teaching and learning, the subject leader works alongside the senior team to monitor standards of teaching and learning. This is achieved through evidence gathering such as: a structured approach to planning, lesson visits, conversations with teachers, conversations with children together with the outcomes of their learning.

Signed:_____Date: _____
          Chair of Learning and Development Team