Computing Subject Report

INTENT - Subject Overview:

At Ivington CE Primary School, we aim to deliver a high-quality Computing education to equip our 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 our 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, our pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that our 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. At Ivington, our aim is for every child to:

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

IMPLEMENTATION – Planning:

At Ivington CE School, our curriculum is carefully planned to engage and excite all pupils. Teachers carefully map out and plan their year group's Computing lessons; to support and guide their plans, teachers may use and adapt ideas taken from Teach Computing, Barefoot Computing and the NCCE. Computing is taught both as a discrete subject, and in a cross-curricular way when the opportunity presents itself. The laptops and iPads in Keys Stage 1 and Key Stage 2 are used to help pupils access the Computing curriculum, along with a range of other resources such as programmable toys and robots. The Computing subject leader and the head teacher continually monitor the resources required to deliver the Computing element of the new National Curriculum.

IMPLEMENTATION AND IMPACT – Assessment, Monitoring and Evidence:

Intervention within lessons is crucial in ensuring children are prepared to learn and misconceptions can be quickly identified and rectified (through intervention). We constantly assess children's work in Computing by making informal judgements as we observe our pupils during each Computing lesson. On completion of a piece of work, children's work is saved to the school server for reference and moderation throughout the year. The Computing subject lead has a portfolio of evidence collected throughout the year. Each year group has specific end-

of-year 'I Can' statements which teachers use when making summative assessments. They are written in child-friendly language, allowing our pupils to track their own progress in meeting the learning targets and to reflect on their progress.

IMPLEMENTATION AND IMPACT – Enrichment opportunities:

Every class has timetabled access to laptops and iPads. In KS1 and EYFS there are also sets of Beebots which are all used regularly. In Upper KS2 we have the use of a full class set of Micro: bits for use in computer lessons and for cross-curricular work. All our pupils are given opportunities to use and develop their ICT skills in context through cross-curricular work.

Every year, as a school we celebrate and promote the annual Safer Internet Day with our pupils. Keeping safe online is a key aspect of our Computing and PSHE curriculum. We regularly publish our Online Safety Newsletter to bring aspects of current and new computing apps and research to parents.

EVALUATING IMPACT ON LEARNING, SEPTEMBER 2022-2023

INTENT	IMPLEMENTATION	IMPACT
To strengthen the use of information technology across all subject areas	Subject lead to deliver training on a range of apps that will support teaching and learning. To use Microsoft Forms to aid in assessment and planning	For ICT to be used as a seamless tool in each classroom to support and inspire learning; for Microsoft Forms to assist in assessment.
To strengthen the teaching and Learning of Computer Science.	Subject Lead to arrange training for Micro;bits ordered through BBC.EYFS training on Barefoot Computing. Teach Computing training for all staff. NCCE to be used to support and extend learning opportunities alongside Teach Computing.	To ensure that children experience a wide range of programmes and that teachers can select the most appropriate tool which will include supplementing with additional learning opportunities. For ICT to be used as a seamless tool in each classroom to support and inspire learning.
To involve children in the leading of computing across the school. Subject lead to promote the use of Digital leaders.	Subject lead to promote the use of Digital leaders as peer teachers. Care of computers and iPads.	For children to be supported in promoting internet safety across the wider school community.

FOCUS FOR LEARNING, SEPTEMBER 2023-2024

INTENTS	IMPLEMENTATION	IMPACT
To enrich the computing curriculum	Computing is taught by confident staff, using a well-structured curriculum. This is taught using Teach Computing, supplemented by Barefoot computing and the BBC Micro:bit site.	

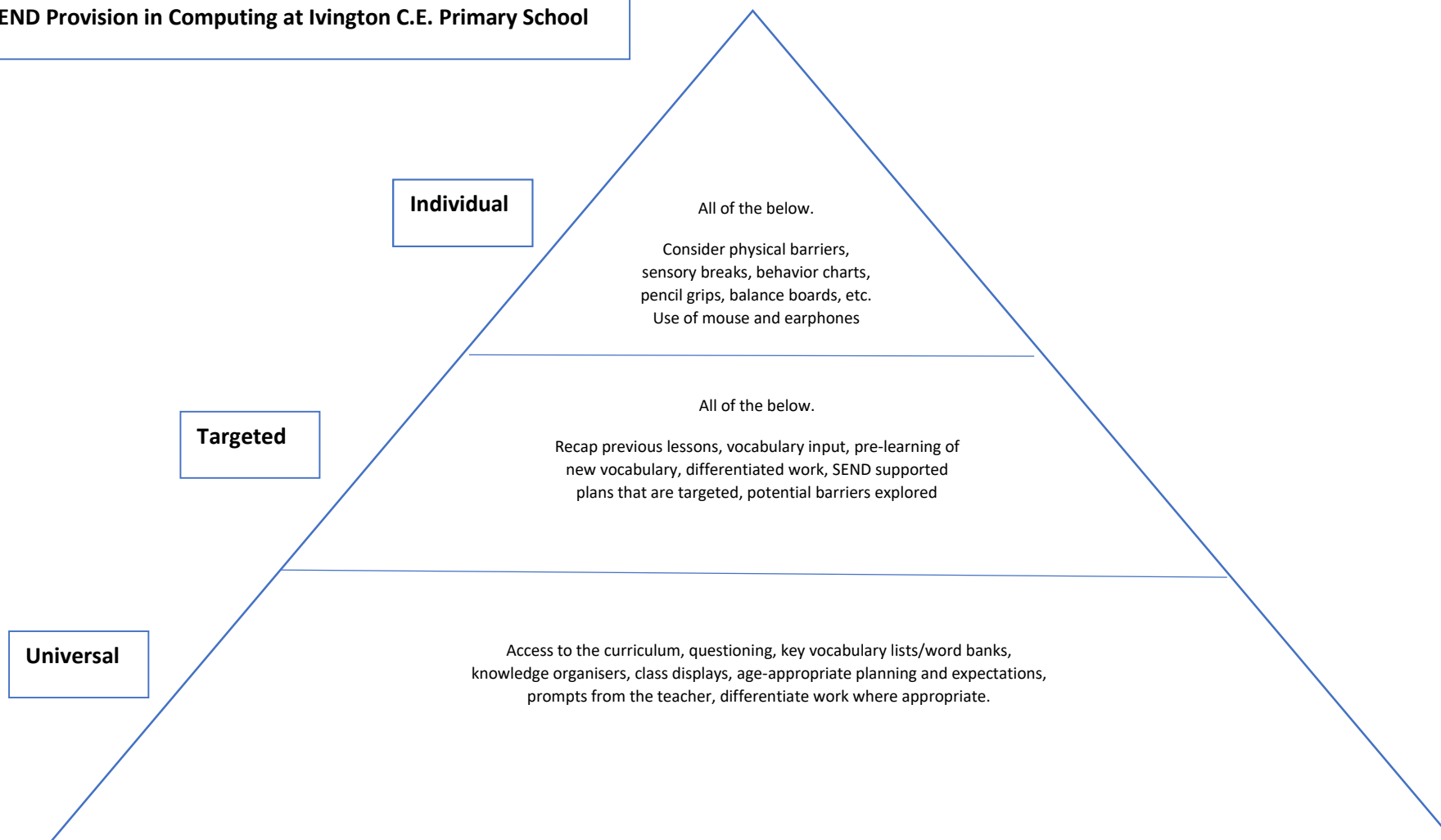|		
Children to articulate their learning about the three areas of computing (computer science, information technology, digital literacy), using appropriate computing vocabulary.	Key vocabulary to be displayed where possible and retrieval strategies used to revisit prior learning. Metacognitive strategies, such as 'Think aloud' will be used to model how the children can explain their learning to both adults and their peers.	
To develop and strengthen cross curricular use of ICT.	Computing lead to investigate staff refresher training on apps, programmes and software that can be used to enhance cross curricular learning and outcomes.	

IMPACT – Staff Training

Staff CPD Staff meetings:	Staff meetings: Curriculum scheme of work. Raising standards in the classroom by using technology apps and strategies for appropriate year groups. Microbit training for KS2 staff.
Subject Lead CPD	Computing Cluster meeting: Opportunities to share good ideas and discuss common issues within the subject. As a group we came up with key aims and values for our subject Computing Subject Leaders Meeting: Up-to-date information linked to the subject, curriculum requirements, Ofsted and resources available

The Early Years Foundation Stage

From Early Years, children will begin explore how technology is an everyday part of their learning and understanding of the world around them, including the using the internet safely and the importance of keeping themselves safe when using digital technologies.

SEND Provision in Computing at Ivington C.E. Primary School

Individual

All of the below.

Consider physical barriers,
sensory breaks, behavior charts,
pencil grips, balance boards, etc.
Use of mouse and earphones

Targeted

All of the below.

Recap previous lessons, vocabulary input, pre-learning of
new vocabulary, differentiated work, SEND supported
plans that are targeted, potential barriers explored

Universal

Access to the curriculum, questioning, key vocabulary lists/word banks,
knowledge organisers, class displays, age-appropriate planning and expectations,
prompts from the teacher, differentiate work where appropriate.

IMPLEMENTATION AND IMPACT - Enrichment opportunities
Cross-curricular links

As a school that values a rich curriculum, we strive to find opportunities for cross-curricular learning. Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems. With each classroom having regular access to computers, we bring computing into all aspects of the learning.

Assessment

At Ivington Primary and Pre-school, assessment is an integral part of the teaching process. Assessment is used to inform planning and to facilitate differentiation. The assessment of children's work is ongoing to ensure that understanding is being achieved and that progress is being made. Feedback is given to the children as soon as possible, and the school's Feedback Policy will guide marking work. Teachers monitor progress and adjust their teaching accordingly through their weekly planning. Medium term plans are adapted based on assessments. Teachers assess and moderate the children at either working towards the expected standard, expected or working at greater depth. Subject Leaders monitor this data and track key groups of children across school. Learning is evidenced and collected in a range of ways, with teachers incorporating a variety of annotated work, saved work on OneDrive, photographs and videos.

Assessment

Formative assessment

Every lesson includes formative assessment opportunities for teachers to use. These opportunities are listed in lesson plans and are included to ensure that misconceptions are recognised and addressed if they occur. They vary from teacher observation or questioning, to marked activities. These assessments are vital to ensure that teachers are adapting their teaching to suit the needs of the pupils that they are working with. The learning objective and success criteria are introduced at the beginning of every lesson. At the end of every lesson, pupils are invited to assess how well they feel they have met the learning objective using thumbs up, thumbs sideways, or thumbs down. This gives pupils a reminder of the content that has been covered, as well as a chance to reflect. It is also a chance for teachers to see how confident the class is feeling so that they can make changes to subsequent lessons accordingly.

Summative assessment (KS1)

When we assess, we want to ensure that we are assessing a pupil's understanding of computing concepts and skills, as opposed to their reading and writing skills. Therefore, we encourage observational assessment while pupils are still developing their literacy skills. We believe that this is the most reliable way to capture an accurate picture of learning. To capture summative assessment data of KS1 pupils, teachers will use the success criteria in each lesson and capturing some of the following while the lesson is taking place: The work that pupils complete (marking), notes on conversations or discussions that teachers have or hear during an activity, photographs of the work that pupils produce during an activity, pupils' self-assessments at the end of the lesson.

Summative assessment (KS2)

Every unit includes an optional summative assessment framework in the form of either a multiple-choice quiz (MCQ) or a rubric. All units are designed to cover both skills and concepts from across the computing national curriculum. Units that focus more on conceptual development include an MCQ. Units that focus more on skills development end with a project and include a rubric. Each of the MCQ questions has been carefully chosen to represent learning that should have been achieved within the unit. Each MCQ includes an answer sheet that highlights the misconceptions that pupils may have if they have chosen a wrong answer. This ensures that teachers know which areas to return to in later units. Rubrics are a tool to help teachers assess project-based work. Each rubric covers the application of skills that have been directly taught across the unit, and highlights to teachers whether the pupil is approaching (emerging), achieving (expected), or exceeding the expectations for their age group.

Pedagogy

Computing is a broad discipline, and teachers require a range of strategies to deliver effective lessons. We use the National Centre for Computing Education's 12 key principles that are underpinned by research:

1. Lead with concepts. Support pupils in the acquisition of knowledge, through the use of key concepts, terms, and vocabulary, providing opportunities to build a shared and consistent understanding. Glossaries, concept maps and displays, along with regular recall and revision, support this approach.

2. Structure lessons. Use supportive frameworks when planning lessons, such as PRIMM (Predict, Run, Investigate, Modify, Make) and Use-Modify-Create. These frameworks are based on research and ensure that differentiation can be built in at various stages of the lesson.

3. Make concrete. Bring abstract concepts to life with real-world, contextual examples and a focus on interdependencies with other curriculum subjects. This can be achieved through the use of unplugged activities, proposing analogies, storytelling around concepts, and finding examples of the concepts in pupils' lives.

4. 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. This approach, called 'semantic waves', can help pupils develop a secure understanding of complex concepts.

5. Work together. Encourage collaboration, specifically using pair programming and peer instruction, and also structured group tasks. Working together stimulates classroom dialogue, articulation of concepts, and development of shared understanding.

6. Read and explore code first. When teaching programming, focus first on code 'reading' activities, before code writing. With both block-based and text-based programming, encourage pupils to review and interpret blocks of code. Research has shown that being able to read, trace, and explain code augments pupils' ability to write code.

7. Create projects. Use project-based learning activities to provide pupils with the opportunity to apply and consolidate their knowledge and understanding. Design is an important, often overlooked aspect of computing. Pupils can consider how to develop an artefact for a particular user or function, and evaluate it against a set of criteria.

8. Model everything. Model processes or practices — everything from debugging code to binary number conversions — using techniques such as worked examples and live coding. Modelling is particularly beneficial to novices, providing scaffolding that can be gradually taken away.

9. Get hands-on. Use physical computing and making activities that offer tactile and sensory experiences to enhance learning. Combining electronics and programming with arts and crafts (especially through exploratory projects) provides pupils with a creative, engaging context to explore and apply computing concepts.

10. Challenge misconceptions. Use formative questioning to uncover misconceptions and adapt teaching to address them as they occur. Awareness of common misconceptions alongside discussion, concept mapping, peer instruction, or simple quizzes can help identify areas of confusion.

11. Add variety. Provide activities with different levels of direction, scaffolding, and support that promote active learning, ranging from highly structured to more exploratory tasks. Adapting your instruction to suit different objectives will help keep all pupils engaged and encourage greater independence.

12. Foster program comprehension. Use a variety of activities to consolidate knowledge and understanding of the function and structure of programs, including debugging, tracing, and Parson's Problems. Regular comprehension activities will help secure understanding and build connections with new knowledge.