Computing on a Page

WHAT WE TEACH AND WHY – (intent)

Our intention is to develop children as digital citizens, who have computational adaptability to face and solve problems in which a digital world presents.

Our school values The 6Rs underpin everything we do at R A Butler Academy. The students are encouraged to be resourceful with the equipment, to be resilient when debugging theirs and others' algorithms. Children will develop their articulacy, through learning how to express themselves and their ideas using technology, enabling them to be active participants in today's digital world. The children will learn the importance of being respectful and socially responsible, for keeping themselves and others safe, both online and offline.

Sequencing, content and progression Our computing curriculum is designed to be practical and purposeful. The computing progression document and Long Term overview grid detail the skills and knowledge taught across the school. The four computing strands (safety and security, programming, computer systems, media and data) are developed over the years through a programme of revisiting and extending, in accordance with the National Curriculum.

- The vocabulary that the children will be taught in each unit is included on the vocabulary progression document, and as an introductory slide for the beginning of each lesson (including a revision of vocabulary from previous year groups) which are referred to when staff are planning. It is also provided in the form of simple knowledge organiser – brief summary of the unit and a glossary of the new vocabulary they will meet. A computing planning template is used in both key stages and the first page provides staff with information about progression of knowledge, as well as subject knowledge, key vocabulary, National Curriculum links, Education for a connected world links and prior knowledge.
- Computing is taught in blocks as we feel that this aids with knowledge and skill retention.
- Some units have particularly strong links with other subjects and are taught as part of a cross-curricular unit e.g. Year 6 STEM project & Publishing writing in KS1 linked to English.
- The computational thinking skills are interlaced through all units to enable the children to become proficient problem solvers and debuggers.
- E-safety and security is woven into all appropriate lessons and in addition, their importance is reinforced further by cross-curricular discussions, such as with PSHE, assemblies and specific RRSA assemblies (linked to rights of the child) and latest advice shared with parent through our school newsletters
- Subject enrichment & cultural capital – this is a current area for development. Some RAB children attend coding clubs outside of school and the plan is for our own RAB Coding Club to start soon. Links are made where possible to real-life use of the skills the children are learning.

School context The use of digital devices in school (such as laptops and tablets) is shared and resourced so that each child can benefit from group, paired and individual activities with devices. Creating roles for groups or pairs allows the children to work collaboratively and build on each other's knowledge and skills. This is most frequent in the early investigative and application stages of a computing unit and is particularly beneficial to help foster the development of skills and application of knowledge. After these early stages, we ensure that children can explore and problem solve more independently, stretching their capabilities and challenging their previous learning, by using digital devices individually.

Integrating literacy fluency and cross-curricular learning
- STEM projects in Years 5 and 6 combine the learning from computing, science and DT.
- Data handling in computing supports mathematical thinking and articulated evaluation. For example, in Year 2, where children design a question, plot results in a graph and present findings in the form of pictograms.
- The use of data loggers (introduced in 2021-2022 academic year) creates another opportunity that combines learning objectives from computing, science and maths.
- In some units, literacy fluency is developed clearly, such as in Year 1's digital media unit, where typing framed sentences will be crucial to the success of the final product. In others, such as in programming units, it is made clear to children that algorithms must be concise and succinct. Here, written reflections become paramount in developing literacy fluency as well as giving children the chance to articulate their understanding.

HOW IT'S TAUGHT – (implementation)

Teaching for engagement and retention
- At the beginning of each unit the children are introduced to what they will be learning in the upcoming unit. Clear links are also made to how this fits with prior learning and what is to come in future years.
- Retrieval practice techniques are used at the start of each lesson to consolidate previous learning and to ensure that the children's knowledge and skills move to their long-term memory.
- Active learning techniques are employed by teachers to promote active engagement.
- STEM sentences are provided to help the children articulate their points. In addition, they are encouraged to use their word banks to help retain tier 3 vocabulary.

What does the sequence of learning look like over a unit and/or in a lesson?
Each computing unit will begin with open questioning and discussion to introduce the unit, sparking interest, before children are presented with their glossary word banks, containing the tier 3 vocabulary relevant to their unit. These banks provide a definition, and where appropriate, an example and a visual. Largely, most lessons will be alike in structure; objective introduction, retrieval activities linking prior learning, taught input, effective modelling (my turn, our turn, your turn) and the completion of a main task (with scaffolded support). In every lesson, children will build ideas and confidence in their understanding through strategies such as think, pair, share. Lessons will conclude with children completing reflections, written or verbal.

Challenge at all levels
Teachers use scaffolding to ensure high expectations are established with the children and that all children can access the learning. In computing, this is achieved namely through directed questioning and teachers using the Greater Depth extender statements to target skills and understanding. We aim to keep the pace of the lesson at the highest level to ensure that there is no 'glass ceiling' for any learner, whilst supporting less able/confident children to progress. If reading and writing are barriers to assessment, alternative forms of assessment are used. Assessment models are being developed for all year groups that combine written forms of assessment with quizzes to enable all children to demonstrate their knowledge, irrespective of their literacy skills. During practical use of technology, children are supported by the class teachers' prior modelling in their input. Lower prior attaining children are supported by a sequence of scaffolded activities. Formative assessments will inform teachers to scaffold further in future activities or to bring the children together to address any misconceptions or clarify their understanding. In some cases, teachers may need to streamline tasks so that these children still are able to achieve the objective, with appropriate support methods chosen. To support and challenge those children who are capable of working at a greater depth, we are exploring the use of extender questions to further challenge their thinking and understanding.

WHAT WE SEE AS A RESULT – (impact)

How computing is assessed
We assess against the progression document, extender statements and learning objectives for the unit. Data is recorded on Sonar (tracking system) and is analysed to identify whether any gaps are emerging. From this, we can then make adjustments if needed. Pupils who are not meeting the expected level are supported by the teacher as part of normal classroom practice.

Progress and Outcomes: *(as of Spring 1 2024)*
KS1 – 87% working at age-related expected level.
KS2 – 80% working at age-related expected level.

Pupil Perceptions:
The children voiced their enjoyment of computing particularly the coding units and their use of Scratch. They discussed the importance of needing resilience to problem-solving when barriers are met. They demonstrated a strong understanding of e-safety and of the vocabulary taught in each unit.

Monitoring and Evaluation:
Overall, Computing is taught effectively throughout the school. There is clear progression, all aspects are taught and CPD is ongoing. The curriculum is currently in a period of transition ensuring a greater level of coding is included and that stronger cross-curricular links are made. We are also looking in to the use of EBooks and electron evidence.