Computing Policy

September 2023

Contents

1. Curriculum Statement

Intent

Our aim is to give children a thorough and ambitious education in computing, equipping them to use technology, computational thinking and creativity to understand and change the world. It is now more important than ever that children are able to use technology positively, responsibly and safely, and that they see good models of this.

By the time they leave William Patten, children will have gained key knowledge and skills in the three main strands of the National Curriculum for Computing (2014): 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). Furthermore, from Nursery to Year 6, experiences in computing and the wider curriculum are planned to develop children's computational thinking skills.

Our knowledge-engaged curriculum enables children to understand how computers and computer systems (such as the internet) work, and how they are designed and programmed. It ensures they know what to do if they have concerns about anything they encounter online, and how to be safe, responsible and respectful when using the internet. Equally, our offer provides many opportunities for learners to apply their evolving knowledge imaginatively, becoming fluent and creative in their mastery of computing. The depth and breadth of our coverage aims to provide all our children with a solid grounding for future learning and the ability to become active digital citizens in the modern world.

Implementation

At William Patten, computing is taught using a blocked-curriculum approach, in which lessons are taught consecutively during a two-week block, rather than once per week over each term. Teachers use specified units from the updated 'Switched On: Computing' scheme, published by Rising Stars, as a starting point for the planning of their computing lessons. The key knowledge and skills that must be taught within each unit have been identified and carefully mapped to support the progression of children's learning across the primary phases, building towards mastery of the end of key stage objectives from 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. An overview of each unit's key vocabulary, key knowledge and linked prior knowledge is shared with families and children before each computing block begins, through our 'Topic Vocabulary' mats. 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 (as worded on the TV Mat of the topic). 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 William Patten gives children the building blocks that enable them to pursue a wide range of interests and vocations in the next stage of their lives.

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, enabling them to become creators and change-makers in our digital world. 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. Fortnightly monitoring of these outcomes, alongside key knowledge quiz results, and interviews 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.

2. Teaching and Learning

As outlined in the implementation of the curriculum, the computing curriculum is mapped to ensure alignment with the National Curriculum and progression across the year groups and phase groups. 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 the EYFS focusing largely on computational thinking and preparing pupils to work towards the National Curriculum's programme of study in Year 1.

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 Promethean or Clevertouch boards in every class, 30 laptops/chromebooks and two class sets of ipads (to be refreshed in 2021). We also have programmable robots (Beebots) 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 vocabulary (TV) mats and 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. As well as the prior learning, the key knowledge and vocabulary to be covered in each unit is sent home to learners and their families on the TV mat.

In each lesson, children are guided towards accomplishing the learning intention 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. A child-friendly poster that outlines the structure of computing lessons can be found at the end of this policy, alongside the Bloom's Taxonomy Teacher Toolkit, which is used to inform the progressive questioning which is used in all lesson sequences and evident on the teaching slides. 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 write a summary paragraph of their learning. 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 co-ordinator 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.

Opportunities will be sought by the school to provide the children with access to places of significance and broader computing learning experiences outside the classroom, that link to the units of work and/or reinforce learning from the National Curriculum programme of study in Computing. School trip opportunities have been indicated for each half term by the subject leader, using the School Trips Mapping document. This lists recommended trips that are appropriate to the topics of each subject that are being taught in each team. At the beginning of the year, teachers will choose one trip per half term from the list.

Teachers, in collaboration with SLT, subject and phase leaders, will ensure that there is diversity in the subjects that children are accessing school trips in. The category that each trip falls under, is also mapped and considered at planning stage to ensure a broad and balanced enrichment offer.

School Trip Categories							
Natural World – parks, woodland	Places of Worship	Architecture and Heritage - Historic sites and contemporary buildings	Artistic - Theatres, galleries and creative settings	Science and Discovery	Adventure Activity and Leisure Centres	Zoos and Aquaria	Regional/ national Museums

Children from reception to Y6 have the option of accessing school trip locations via the London underground as well as local bus routes.

The school will also seek to provide access to people with specialist computing and STEM skills from the local and wider community to enrich the curriculum.

3. 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. The laminated TV mats which are shared at the start of a unit also list prior knowledge from previous year groups to reinforce this.

Self-assessment
The learning intention (LI) for each lesson is shared with the children, in the form of a 'Can I…?' question 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, which implements ideas from Bloom's taxonomy, 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.

Target setting
Project management skills developed through computing, such as planning, organising, motivating others and allocating resources, are of great importance in real-world projects, and they can be widely applied in education.

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 quiz 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. The quality of teaching and learning is also assessed at the end of a unit, as part of the fortnightly monitoring cycle. 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.

Assessment of writing

There is a strong focus on developing the quality, presentation and content of children's written work across all subjects. The standard of children's writing is expected to be the same high standard across all subjects – teachers marking will address inaccuracies (such as, for example, inconsistencies in the use of capital letters and punctuation). It will also prompt when handwriting and grammar needs improvement, indicating an identified target and providing a suitable model where appropriate. In computing, it should be noted that much of the written work will be typed, and in these cases handwriting guidance is not applicable.

The majority of marking takes the form of highlighting. If a sentence or word is highlighted, it indicates a successful feature of the child's work. For example, this could indicate:

- evidence that the skills/knowledge for the lesson have been applied;
- use of key vocabulary or generally ambitious vocabulary;
- good use of grammar (conjunctions to elaborate on a point), or any other literacy focus such as the use of capital letters, age appropriate punctuation etc to promote literacy lessons beyond English lessons
- and/or any aspect of the child's work which is in line with the pedagogy of computing – for example good use of computational thinking skills.

Although there will not always be a recorded outcome in children's books, tasks will be planned that provide plenty of opportunity for children to demonstrate the application of the key knowledge and skills for the lesson.

4. Planning and Resources

Planning

Rising Stars: Switched On Computing

The school uses the updated Rising Stars: 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 updated 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.

Resources

Computing Suite

There are 18 computers, each having access to a range of programmes that can meet the needs of the new programme of study. We also have 30 laptops/chromebooks to support independent learning in the computing suite, as well as allowing computing work in the classroom environment.

iPads

Each teacher has an iPad for assessment purposes. We have two class sets of iPads for use within the classroom to support the programme of study.

Classroom Computers

There is at least one desktop computer in each classroom. These machines are networked and have access to the shared drive for planning and preparation.

Printers and Photocopiers

Each floor now has at least one colour photocopier which is networked to each computer.

Interactive Whiteboards

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

Other Resources to support the curriculum

- Micro:Bits
- Beebots
- Headphones
- Microphones
- Webcams with microphones for classroom desktop computers
- Google Classroom

5. Organisation

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 focussed teaching block.

6. 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 Nursery, 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 Beebots and also through coding projects for pre-readers on the iPads during CSEd week. Throughout the year, children in Nursery and 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.

7. KS1 and KS2

At William Patten, 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.

Key Stage 1 - Subject Knowledge

Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.

An algorithm is a precisely defined procedure – a sequence of instructions, or a set of rules, for performing a specific task (e.g. instructions for changing a wheel or making a sandwich). While all correct algorithms should produce the right answer, some algorithms are more efficient than others. Computer scientists are interested in finding better algorithms, partly out of intellectual curiosity, and partly because improvements in algorithms can result in massive savings in terms of both cost and time.

Use logical reasoning to predict the behaviour of simple programs.

Computers are deterministic machines. We can predict exactly how they'll behave through repeated experience or by developing an internal model of how a piece of software works. Stepping through the program can give a clear sense of what it does, and how it does it, giving a feel for the algorithm that's been implemented.

In the classroom, getting one pupil to role-play a floor turtle or screen sprite while another steps through the program can give a far more immediate sense of what's going on. When working with a computer, encourage pupils to make a prediction about what the program will do before they press return or click the button, and to explain their prediction logically; this is part of computer science. **Logical reasoning** also implies that pupils are following a set of rules when making predictions. Pupils who step outside the boundaries of these rules are not using logical reasoning. A pupil who expects a roamer to jump doesn't understand the constraints of its programming language or hardware.

Use technology purposefully to create, organise, store, manipulate and retrieve digital content.

Creating digital content has many practical possibilities. These include commonplace tasks such as word-processing, creating pictures using paint packages, working with digital photographs and video (including animations), writing computer programs, and creating online content such as blog posts, forum contributions, wiki entries and social network updates. This creative work is digitised (i.e. converted to numbers) once it's on the computer. The sheer quantity of digital information makes the skill of organising digital content more important than ever. In more practical terms, we might think of how to bring together different digital media, how to order a series of paragraphs, how to organise the files in our documents directory, or how to tag photos and posts online. Storing digital content is perhaps something we take for granted. Knowing where a file is saved in the directory structure is important. It's vital to be able to distinguish between the hard disk (or solid state storage) inside the computer itself, the school's network server, USB disks or memory cards, and online storage via the internet. Manipulating digital content is likely to

involve using one or more application programs, such as word-processors, presentation software, or image-, audio- or video-editing packages. The pupil makes changes to the digital content, which might include combining content from multiple sources. The skill here is not just using the software tools, but also knowing how best to change the content for the audience and purpose, and to take into account principles of good design. Retrieving digital content could be seen as the reverse of storing: the skills of opening and saving documents are similar. Retrieving content requires you to know what you called the file, what file type it is, and where you stored it.

Recognise common uses of information technology beyond school
There are many opportunities for pupils to consider the applications of algorithms, programs and systems.

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
This statement covers the key principles of pupils' e-safety. Pupils should be aware of the main risks associated with the internet, and recognise that they should not share certain types of personal information online. Pupils must have a clear understanding of what to do if they have concerns about inappropriate online behaviour (such as unwelcome contact or cyberbullying). Telling a teacher or parent should normally be the first response, but pupils should also know that they can talk directly and confidentially to Childline about such matters. As well as the emphasis on this aspect in lessons, the school also celebrates the annual national 'Safer Internet Day'. This includes a KS1 assembly about e-safety, led by the coordinator and communications to parents in line with national guidance on safer internet use at home.

Key Stage 2 - Subject Knowledge

Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them in to smaller parts.
The focus on algorithms at key stage 1 leads pupils into the design stage of programming at key stage 2. Algorithms are the necessary start of the process of creating working code, and identifying the steps needed to solve any problem is essential. Splitting problems into smaller parts is part of computational thinking. For example, designing a game in Scratch will involve thinking about algorithms, programming, drawing sprites and backgrounds, making animations, and even composing music or recording sound effects.

Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.
Sequence in this context is the step-by-step nature of computer programs, mirroring the sequence of steps the algorithm would list. **Selection** refers to instructions such as if ... then ... otherwise decisions in which the operation (what the program does) depends on whether or not certain conditions are met. For example, a quiz provides different feedback if the player answers the question correctly or incorrectly. It is helpful to refer pupils to selections (choices) they make in everyday life; for example, if it rains in the morning, then I will wear my anorak to school, otherwise I won't. **Repetition** is a programming structure such as a repeat ... until loop in which the computer runs part of the program a certain number of times or until a particular condition is met. **Variables** are used to keep track of the things that can

change while a program is running. They are a bit like x or y in algebra, in that the values may not initially be known.

Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.
Key stage 2 pupils should be able to explain the thinking behind their algorithms, talking through the steps and explaining why they've solved a problem the way they have. They also need to be able to look at a simple programming project and explain what's going on. This is made easier with languages like Scratch, Kodu and Logo, which feature an on-screen sprite or turtle. The immediate feedback helps pupils to understand and debug their programs. Pupils might also be expected to look at someone else's algorithm and explain how it does what it does.

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.
Computer networks, including the internet, are made up of computers connected together. The computers include fast, dedicated machines that pass on data that's not intended for them (called 'routers', 'gateways', 'hubs' or 'switches', depending on particular roles), and 'servers' (always-on machines looking after emails, web pages and files that other computers might ask for from time to time). The connections between the computers in a network may consist of radio or satellite signals, copper wires or fibre-optic cables

Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.
Using search technologies involves aspects of computer science, information technology and digital literacy. Effective use of search engines gets the results you want. It relies on specifying the right keyword, skimming and scanning the results to see which seems most relevant, and distinguishing between the main results and adverts presented as sponsored results. It may also involve using other features7 of the search engine, including searching for phrases rather than keywords, or limiting searches to a particular time frame, language, reading level or website.

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.
This is something of a catch-all requirement, bringing together various aspects of the computing curriculum. Pupils might typically be expected to demonstrate progression by:

- using software under the control of the teacher
- then, using software with increasing independence
- then, combining software (e.g. importing an edited image or video into a presentation or web page)
- then, selecting software themselves (perhaps from the full range of applications installed on computers, smartphones and tablets at home or at school, or available to them via the web).

Use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concerns about content and contact.

Safe and responsible use of technology at key stage 2 builds on skills learned in key stage 1. As well as requiring pupils to keep themselves safe and to treat others with respect, the programme of study at key stage 2 introduces an emphasis on responsible use of technology. Pupils need to consider how their online actions impact other people. They need to be aware of their legal and ethical responsibilities, such as showing respect for intellectual property rights (e.g. musical, literary and artistic works), keeping passwords and personal data secure, and observing the terms and conditions for web services they use (such as the 13+ age restriction on most websites, including Facebook, resulting from COPPA10 legislation). Pupils should also develop some awareness of their digital footprint: the data automatically generated when they use the internet and other communication services, and how this is, or could be, used. Pupils should be aware of, and abide by, the school's acceptable use policy, as well as the requirements of any other services they use. Encourage pupils to think twice, and to check terms and conditions, before signing up for internet-based services.

As well as the emphasis on this aspect in lessons, the school also celebrates the annual national 'Safer Internet Day'. This includes an assembly for each key stage related to the year's e-safety theme, led by the computing coordinator, 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 the Patten Pages or by email.

8. Equal Opportunities

William Patten Primary School will ensure that all children are provided with the same learning opportunities regardless of social class, gender, culture, race, disability or learning difficulties. As a result we hope to enable all children to develop positive attitudes towards others. All pupils have equal access to computing and all staff members follow the equal opportunities policy. Resources for SEN children and children who are working at greater depth are made available to support and challenge appropriately. In 2021, William Patten took part in two studies on 'Gender Balance in Computing' to support attempts to redress the gender imbalance in uptake of computing subjects in KS4 and beyond.

9. Inclusion

The inclusion of all learners is central to our implementation of a knowledge-engaged computing curriculum, and teachers adapt their teaching and learning tasks and activities to ensure an appropriate level of challenge for all groups and individuals. Even prior to scaffolding or adaptations, progress for all groups, particularly in programming and computer science, can be supported by the use of 'low floor high ceiling' tasks, programs and platforms (Grover and Pea, 2013). For example, employing block-based programming on Scratch enables all learners to cross the threshold into creating a working program, while also being powerful and extensive enough for more advanced programmers to progress and thrive (Handbook of Research on Instructional Systems and Educational Technology, 2017).

Computing forms part of the national curriculum to provide a broad and balanced education for all, which can only be achieved by setting suitable learning challenges and responding to each child's different needs. Our topic vocabulary (TV) mats are sent home to families and learners ahead of each computing block. These provide visuals for key vocabulary alongside definitions, prior learning links, key knowledge for the unit linked to the NC PoS and other

useful information. Relevant books and online resources are also sign-posted on the TV mats. This approach, as well as using the visuals and information with learners in class, allows us to make key knowledge explicit for all pupils. This is particularly useful in supporting pupils in receipt of the PPG, who may not have had the same access or experiences with technology and computing as their peers. The visual vocabulary, alongside our use of 'Word Aware', seeks to support our learners with SEN (and indeed all our learners) to understand, use and retain the key vocabulary of computing. Children with SEN and those in receipt of the PPG are a particular focus when conducting fortnightly monitoring, to evaluate the inclusivity of the curriculum and ensure these children are making good progress and achieving in line with their peers.

Where appropriate, computers and other digital/assistive technology resources can be used to support children with special educational needs on a one to one basis across the curriculum, and our teachers have received training to enable this. Additionally, as part of our approach to teaching and learning, we will use adapted resources wherever possible, such as visual timetables, different coloured backgrounds, enlarged fonts and screen printouts.

10. Role of the Subject Leader

The computing coordinator is responsible for overseeing the development, implementation and impact of an ambitious and engaging computing curriculum, which enables all students to progress in their mastery of computer science, digital literacy and information technology. The targets and priorities for the development of computing are outlined by the subject leader at the start of each academic year in the School Development Plan.

Measures of success are analysed and evaluated by the computing coordinator as part of the regular monitoring cycle. Learner's outcomes on Seesaw and in books, end-of-unit key knowledge quiz results and pupil summary writing are all examined in order to measure the impact of our curriculum and identify areas for action. Pupil and teacher voice interviews and a review of lesson slides are also undertaken as part of the monitoring cycle, enabling the subject leader to maintain a clear picture of computing across classes and key stages.

The subject leader will use the outcomes of this process to support further development in computing, alongside the findings from regular book looks (where teachers across year groups will view outcomes of work in each subject). The book look process itself will provide an opportunity to recognise, celebrate and disseminate good practice, and inform judgements as to the progress being made towards identified whole school and subject priorities. Wherever possible, models and that the children have created will be seen as part of this process. In-house moderation and book looks will be scheduled to take place within teachers' directed time.

The above monitoring processes allow the coordinator to assess and address staff training needs on a regular basis, guiding the annual development plan process and response to individual needs and requests throughout the year. Lesson slides and outcomes for each unit of work will also be monitored by the SLT, in collaboration with subject and phase leaders. This will inform any necessary follow-up action and support, to ensure that school systems are consistent across year groups, age phases across the school throughout the curriculum. This is part of the school's commitment to ensuring a high quality, broad and stimulating curriculum.

As well as this, teachers should also attempt to continually develop their own skills and knowledge, using the signposted CPD resources and software videos, identifying their own outstanding needs and notifying the coordinator. Teachers will be encouraged to use their

information technology skills to produce plans, reports, communications and teaching resources. The co-ordinator will provide on-going staff training to ensure teachers are confident in delivering the new curriculum, in a range of contexts. This will have an emphasis on ensuring teachers can support appropriate progression in knowledge and skills in line with the computing knowledge and skills progression map.

Where necessary, the computing coordinator will work alongside the technician to support staff to overcome technical issues with computing technology at the school, and help to support parents with the digital devices and software that they use with their children for home learning. The coordinator will also liaise and access support from the technician, who visits on a weekly basis, as and when required.

The computing coordinator will oversee and maintain resources to support the computing curriculum. They will maintain links with external agencies to explore opportunities to enrich the computing curriculum by providing access to specialist trips, expertise and resources. They will also ensure high standards across the computing curriculum through effective monitoring, modelling of lessons, and support with planning, as appropriate.

The computing coordinator also runs a Code Club for KS2 pupils.

11. Parents

Parental involvement is highly encouraged, particularly if there is a specialist subject being taught within a class. Code mornings have been held previously and parents can be encouraged to learn code along with their children at home.

Policy Agreed: **July 2023**
Policy Review Date: **July 2024**

LOW LEVEL THINKING SKILLS ← → HIGH LEVEL THINKING SKILLS

Knowledge

Recall /regurgitate facts without understanding. Exhibits previously learned material by recalling facts, terms, basic concepts and answers.

Key words:

Choose, Copy, Define, Duplicate, Find, How, Identify, Label, List, Listen, Locate, Match, Memorise, Name, Observe, Omit, Quote, Read, Recall, Recite, Recognise, Record, Relate, Remember, Repeat, Reproduce, Retell, Select, Show, Spell, State, Tell, Trace, What, When, Where, Which, Who, Why, Write

Actions:

Describing, Finding, Identifying, Listing, Locating, Naming, Recognising, Retrieving

Outcomes:

Definition, Fact, Label, List, Quiz, Reproduction, Test, Workbook, Worksheet

Questions:

Can you list three ...?
Can you recall ...?
Can you select ...?
How did _____ happen?
How is ...?
How would you describe ...?
How would you explain ...?
How would you show ...?
What is ...?
When did ...?
When did _____ happen?
Where is . . . ?
Which one ...?
Who was ...?
Who were the main . . . ?
Why did ...?

Comprehension

To show understanding finding information from the text. Demonstrating basic understanding of facts and ideas.

Key words:

Ask, Cite, Classify, Compare, Contrast, Demonstrate, Discuss, Estimate, Explain, Express, Extend, Generalise, Give examples, Illustrate, illustrate, Indicate, Infer, Interpret, Match, Observe, Outline, Predict, Purpose, Relate, Rephrase, Report, Restate, Review, Show, Summarise, Translate

Actions:

Classifying, Comparing, Exemplifying, Explaining, Inferring, Interpreting, Paraphrasing, Summarising

Outcomes:

Collection, Examples, Explanation, Label, List, Outline, Quiz, Show and tell, Summary

Questions:

Can you explain what is happening . . . what is meant . . .?
How would you classify the type of ...?
How would you compare ...?contrast ...?
How would you rephrase the meaning ...?
How would you summarise ...?
What can you say about ...?
What facts or ideas show ...?
What is the main idea of ...?
Which is the best answer ...?
Which statements support ...?
Will you state or interpret in your own words ...?

Application

To use in a new situation. Solving problems by applying acquired knowledge, facts, techniques and rules in a different way.

Key words:

Act, Administer, Apply, Associate, Build, Calculate, Categorise, Choose, Classify, Connect, Construct, Correlation, Demonstrate, Develop, Dramatise, Employ, Experiment with, Group, Identify, Illustrate, Interpret, Interview, Link, Make use of, Manipulate, Model, Organise, Perform, Plan, Practice, Relate, Represent, Select, Show, Simulate, Solve, Summarise, Teach, Transfer, Translate, Use

Actions:

Carrying out, Executing, Implementing, Using

Outcomes:

Demonstration, Diary, Illustrations, Interview, Journal, Performance, Presentation, Sculpture, Simulation

Questions:

How would you use...?
What examples can you find to ...?
How would you solve _____ using what you have learned ...?
How would you organise _____ to show ...?
How would you show your understanding of ...?
What approach would you use to...?
How would you apply what you learned to develop ...?
What other way would you plan to ...?
What would result if ...?
Can you make use of the facts to ...?
What elements would you choose to change ...?
What facts would you select to show ...?
What questions would you ask in an interview with ...?

Analysis

To examine in detail. Examining and breaking information into parts by identifying motives or causes; making inferences and finding evidence to support generalisations.

Key words:

Analyse, Appraise, Arrange, Assumption, Breakdown, Categorise, Cause and effect, Choose, Classify, Differences, Discover, Discriminate, Dissect, Distinction, Distinguish, Divide, Establish, Examine, Find, Focus, Function, Group, Highlight, In-depth discussion, Inference, Inspect, Investigate, Isolate, List, Motive, Omit, Order, Organise, Point out, Prioritize, Question, Rank, Reason, Relationships, Reorganise, Research, See, Select, Separate, Similar to, Simplify, Survey, Take part in, Test for, Theme, Comparing

Actions:

Attributing, Deconstructing, Integrating, Organising, Outlining, Structuring

Outcomes:

Abstract, Chart, Checklist, Database, Graph, Mobile, Report, Spread sheet, Survey

Questions:

What are the parts or features of ...?
How is _____ related to ...?
Why do you think ...?
What is the theme ...?
What motive is there ...?
Can you list the parts ...?
What inference can you make ...?
What conclusions can you draw ...?
How would you classify ...?
How would you categorise ...?
Can you identify the difference parts ...?
What evidence can you find ...?
What is the relationship between ...?
Can you make a distinction between ...?
What is the function of ...?
What ideas justify ...?

Synthesis

To change or create into something new. Compiling information together in a different way by combining elements in a new pattern or proposing alternative solutions.

Key words:

Adapt, Add to, Build, Change, Choose, Combine, Compile, Compose, Construct, Convert, Create, Delete, Design, Develop, Devise, Discover, Discuss, Elaborate, Estimate, Experiment, Extend, Formulate, Happen, Hypothesise, Imagine, Improve, Innovate, Integrate, Invent, Make up, Maximise, Minimise, Model, Modify, Original, Originate, Plan, Predict, Produce, Propose, Reframe, Revise, Rewrite, Simplify, Solve, Speculate, Substitute, Suppose, Tabulate, Test, Theorise, Think, Transform, Visualise

Actions:

Constructing, Designing, Devising, Inventing, Making, Planning, Producing

Outcomes:

Advertisement, Film, Media product, New game, Painting, Plan, Project, Song, Story

Questions:

What changes would you make to solve...?
How would you improve ...?
What would happen if...?
Can you elaborate on the reason...?
Can you propose an alternative...?
Can you invent...?
How would you adapt _____ to create a different...?
How could you change (modify) the plot (plan)...?
What could be done to minimise (maximise)...?
What way would you design...?
Suppose you could _____ what would you do...?
How would you test...?
Can you formulate a theory for...?
Can you predict the outcome if...?
How would you estimate the results for...?
What facts can you compile...?
Can you construct a model that would change...?
Can you think of an original way for the ...?

Evaluation

To justify. Presenting and defending opinions by making judgements about information, validity of ideas or quality of work based on a set of criteria.

Key words:

Agree, Appraise, Argue, Assess, Award, Bad, Choose, Compare, Conclude, Consider, Convince, Criteria, Criticise, Debate, Decide, Deduct, Defend, Determine, Disprove, Dispute, Effective, Estimate, Evaluate, Explain, Give reasons, Good, Grade, How do we know?, Importance, Infer, Influence, Interpret, Judge, Justify, Mark, Measure, Opinion, Perceive, Persuade, Prioritise, Prove, Rate, Recommend, Rule on, Select, Support, Test, Useful, Validate, Value, Why

Actions:

Attributing, Checking, Deconstructing, Integrating, Organising, Outlining, Structuring

Outcomes:

Abstract, Chart, Checklist, Database, Graph, Mobile, Report, Spread sheet, Survey

Questions:

Do you agree with the actions/outcomes...?
What is your opinion of...?
How would you prove/disprove...?
Can you assess the value/importance of...?
Would it be better if...?
Why did they (the character) choose...?
What would you recommend...?
How would you rate the...?
What would you cite to defend the actions...?
How would you evaluate ...?
How could you determine...?
What choice would you have made...?
What would you select...?
How would you prioritise...?
What judgement would you make about...?
Based on what you know, how would you explain...?
What information would you use to support the view...?
How would you justify...?
What data was used to make the conclusion...?

Bloom's Taxonomy: Teacher Planning Kit

Appendix 1: Bloom's Taxonomy

Appendix 2: Computing lesson poster

Features of a Computing Lesson

In our lessons, we learn the 3 strands of computing: computer science, information technology (IT) and digital literacy.

Learning Intention

Each lesson begins with a 'Can I' question that shows me what knowledge and skills to aim for.

Let's Learn

We recap what we know, and learn new information, ideas and vocabulary.

Let's Discuss

We deepen our understanding through questions and discussion of concepts.

Let's Do

The majority of each lesson should involve active learning through practical experiences.

For each task our teacher is specific about how to reach and measure success.

Let's Review

At different points in a lesson we review what we have done and adapt (or debug!) if necessary.