Computing

Subject Policy

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Rationale

This policy outlines the intent, implementation and intended impact for the teaching, leadership and assessment of Computing at Parkland Primary School. The school's policy for Computing follows the 2014 National Curriculum Framework and the Early Years Foundation Stage Framework.

Our Mission

At Parkland Primary School, we believe that every child in our school community should have *Limitless Learning* opportunities. We all have the ability to succeed and our school works hard to ensure that our pupils can *Discover their Potential.*

Our Values: Grow, Believe, Achieve, Succeed

Intent

At Parkland Primary School we have worked together to create a shared language for learning (Appendix 1). Underpinning this and all curriculum design is our whole school definition of learning: *'Learning is the process of building on and strengthening the connections in your brain.'*

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.

Aims of Computing knowledge-led curriculum:

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

At Parkland Primary School, teachers work collaboratively using subject progression maps and knowledge mapping to coherently plan and sequence learning journeys designed to allow our pupils to gain cumulatively sufficient knowledge to ensure they are ready for the next stage of their education.

Curriculum Drivers

At Parkland Primary School, through the delivery of a high-quality knowledge led Computing curriculum, we aspire for our pupils to be…

CONFIDENT LEARNERS through…

- Allowing pupils to have high aspirations and achieve their personal best.

- Providing exceptional opportunities for pupils' personal development.

- Developing the characteristics of confident individuals.

SUCCESSFUL LEARNERS through…

- Culturing a lifelong love of reading.

- Challenging, motivating, inspiring and leading pupils to a lifelong interest in learning.

- Preparing pupils for the next stage in their education and for the world of work.

- Providing the essential knowledge, skills and cultural capital they need to succeed in future learning and life.

RESPONSIBLE CITIZENS through…

- Promoting local, national and global awareness through the curriculum and understanding of their role in building a sustainable world.

- Promoting British Values to ensure pupils are fully prepared for life in modern Britain.

- Offering a wide range of rich experiences in the curriculum and wider curriculum for personal development.

Implementation

How Computing is planned and taught:

Teachers work collaboratively to plan Computing using the learning journey planning format (Appendix 2). Computing is planned using a progression of skills document to ensure teaching is designed to help learners to remember, in the long term, the content they have been taught and to integrate new knowledge into larger concepts. This also allows appropriate skills can be revisited where necessary to support learning progressing.

Opportunities for retrieval practise occur in two places in the curriculum:

- **Daily review** to activate prior learning forms the start of most lessons.
- **Retrieval practice** of non-negotiable taught knowledge will happen on three separate spaced occasions away from the point of teaching the topic. This should support children in securing long-term knowledge acquisition.

Phase and subject leaders are responsible for ensuring that the taught curriculum in each phase mirrors the intended progression of knowledge and skills mapped out for each Phase in the progression document. Therefore, ensuring previous content supports subsequent learning and pupils are equipped with the knowledge necessary for the next stage in their education and that the full content of National Curriculum is taught before children leave Parkland Primary School.

EYFS:

The EYFS framework is structured very differently to the National Curriculum as it is organised across seven areas of learning rather than subject areas. The skills taught across EYFS feed into the Computing curriculum but are not always taught as subject specific knowledge and skills.

The knowledge and skills needed to achieve these outcomes are taught mostly through children playing and exploring during continuous provision times in the day. Teachers deliberately plan enhanced activities which give opportunity for children to learn through their own discovery.

KS1/ KS2:

Through KS1 and KS2, teachers use the Teaching Computing Curriculum resources on Teach Computing website https://teachcomputing.org/curriculum

The National Curriculum statements are split into units which progress through each year group;

- Computing Systems & Networks
- Creating Media
- Data & Information
- Programming

The progression of skills document connects concepts, knowledge, skills and objectives.
By blocking these areas of Computing then returning to them each academic year, deep learning opportunities are provided as children return to prior knowledge before building on it.

Computing lessons are taught once weekly meaning a unit of Computing is completed each half term. Classes have access to a range of mobile devices which are timetabled between classes within each year group.

Blended Learning:

In addition to dedicated time each week to focus on the Computing Curriculum, children in KS1 and KS2 are also accessing devices to support our Blended Learning approach. Mobile devices are used to support learning within the classroom via platforms such as Microsoft Teams, TT Rockstars, Century AI, MyOn Reading and Spelling Shed.

Online Safety:

From EYFS through to KS2, all pupils access a rigorous Online Safety curriculum with the support of the Project Evolve units - https://projectevolve.co.uk/toolkit/

To support our approach to long term learning, Online Safety lessons are taught both explicitly each half term but also at the beginning of every Computing lesson in the form of 'Can I Still' retrieval quiz questions. *Please also refer to the Online Safety Policy.*

Effective teaching of Computing:

Parkland Primary School prides itself on being a research informed school. Following staff training on Rosenshine's Principles in Action (Sherrington and Caviglioli, 2019) school teachers are expected to actively present material and structure lessons using the ten principles of instruction below. These principles not only facilitate the memorising of information, but allow pupils to understand it as an integrated whole, and to recognise the relationships between the parts. This **does not** mean that every lesson needs to follow the exact structure or sequence and this is **not** intended to be used as checklist for each lesson; these elements can occur at different points in a lesson, or over a sequence of lessons, and can be integrated in different ways and at different times.

Principles of Instruction:

1. **Daily Review** – lessons begin with a short review of previous learning to re-activate recently acquired knowledge.
2. **Present new material using small steps** – recognise the limitations of the working memory by breaking down concepts and procedures into small steps.
3. **Ask questions** – teachers need to ask large numbers of questions to check for understanding
4. **Provide models** – a central feature of giving good explanations. These may include concrete models to aid abstract concepts, worked narrative examples modelling a process
5. **Guide student practice** – give time to guide student practice supported by modelling, corrective feedback and re-teaching where gaps remain.
6. **Check for student understanding** – teachers use their questioning to ascertain from as many children as possible what they have understood? A range of questioning strategies below can be used to do this (see below).
7. **Obtain a high success rate** – teachers need to engineer a high success rate (around 80%) where children are reinforcing error-free, secure learning, improving fluency and confidence providing a platform for independent practice. However, it is still important pupils are challenged here (a success rate a 90%+ is too high).
8. **Provide scaffolds for difficult tasks** – temporary aids may be required to support children in developing a level of independence but are withdrawn at the right point so that pupils don't become reliant upon them.
9. **Independent Practice** – here teachers need to construct learning so that students are able to do challenging things by themselves without help. It is important that the material that students practise is the same as during guided practise for appropriate levels of success to be secured

10. **Weekly and Monthly Review** – to ensure that previously learned material is not forgotten and break the forgetting curve. A variety of retrieval techniques can be used to do this.

Questioning Strategies used at Parkland Primary School:

- How do you know? Justify Why?
- What's the same? What's different?
- Mathematical Superheros: Captain conjecture, Ace organiser, Canine the Convincer, The Classifier, The Specialiser, The Visualiser and Excellent Expressor
- Think – Pair – Share
- Cold call (no hands up)
- No opt out (bounce back if a child isn't able to answer initially)
- Probing questions (staying with a child to probe deeper to check understanding)
- Say it again better (ask children to rephrase answers a second time to build a deeper, high quality answer)
- Agree, Disagree, Add your own… (to structure class discussion around a question)
- Whole class response: choral, whiteboard, ABCD, thumbs up + down for true or false

Inclusion and Equal Opportunities (challenge for all):

In line with our mission statement, we believe every child will have equal opportunity to achieve their full potential and access an ambitious and coherent curriculum that leads to deep learning and an understanding of a sustainable world. Regardless of race, gender, cultural background, ability or Special Educational Needs or Disability.

If a child has a special educational need of disability, we will do our very best to ensure we meet that child's individual needs when accessing the Computing curriculum. We comply with the requirements set out in the SEND Code of Practice. If a teacher has concerns about the progress of a child, then they will liaise with the in school SENDCO to arrange appropriate assessment of need and set up personal provision through initially writing a Personalised Provision Plan. In some cases, where the demands of the curriculum may be too much, this may involve the use of PIVATS targets to track small step progress for this child or differentiation within the classroom environment to meet the needs of that child.

Impact

Assessing Progress

Formative Assessment

Pupils' progress will be assessed using regular formative assessment in lessons through strategies such as questioning, regular retrieval practice, quizzing, independent learning tasks and informal assessment of learning produced.

Summative Assessment

Assessing long-term learning:

The identified non-negotiable online safety knowledge and computing knowledge and skills for each half termly computing unit is assessed through an online quiz which teachers use to give instant feedback to children. Learning journeys are planned and designed in a way which build to an end of unit outcome or purpose. Any gaps from the assessment are addressed and re-taught as necessary; knowledge is re-visited throughout the year. These skills are then sequentially re-visited and built upon due to the coherently planned and sequenced progression mapping across the school.

Individual progress is reported to parents through two termly Parents' Evenings and an end of year report.

References:

Rosenshine. B. (2012) Principles of Instruction: Research-Based Strategies That All Teachers Should Know. *American Educator*, 36 (1) p12-19.

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The Learning Scientists (2016). [Posters and Blogs]. Available at: https://www.learningscientists.org [Accessed 6 Sep. 2019].

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