Teaching & Learning

Science

1. **Key Principles**
    - We dedicate a weekly lesson to Science with a least 2 practical/investigation lessons every half term.
    - We teach Science through giving children first hand and real life experiences.
    - We challenge and promote curiousity through open ended and increasingly difficult tasks.
    - We develop children's scientific knowledge through a broad and balanced curriculum.

2. **How our approach is informed by Pupils, Parents/Carers & Staff/Governors**
   Consultation with and feedback from pupils, parents, carers, staff and governors told us:
    - Pupils spoke about a love for Science but felt Science focused more on writing and knowledge than practical Science. They wanted more investigations and experiments so we ensure that all children receive at least 2 practical Science investigations a half term.
    - Parents had no awareness of how Science was taught or what their children were learning. The development of practical Science and Science homeworks has allowed parents to have more knowledge of what Science is going on. An annual Science week is also going to take place. The week will involve a range of different visitors, practical activities and also a celebration for parents to attend.
    - The use of different forms of questions has allows teachers to feel more confident when questioning and developing children's scientific skills and knowledge.

3. **Coverage Statement**
   Science topics and projects are based around The National Curriculum programmes of study for pupils in KS1 & KS2. The programmes of study are further clarified using guidance resources from Focus Education, REAch2 and experienced teachers at The Palmer Academy. Using these resources, teachers plan sequences of lessons,

projects and topics during the year so that all children have investigated the full National Curriculum for Science by the time they have reached the end of KS1 or KS2. Science has it own topic boxes in the PPA room for each year group. The topic boxes include a range of different practical resources and books.

4. Planning

Teachers plan exciting and engaging lessons, projects and topics that support all children in making good or better progress from their starting points, towards age related expectations. Teachers hold an awareness of what is to be covered each key stage, year, term and on a project or topic by topic basis and this is shared with pupils, parents and school leaders each term.

In line with the schools overall approach to teaching and learning, Science lessons, projects and topic plans are informed by:

- The need to create early experiences that elicit assesments of children's prior knowledge, skills and understanding, including the questions and misconceptions that they hold about key concepts and constructs.
  E.g. Science lessons begin with the use of a true and false/always never line to add statements to, open ended questioning or a real life experience.
- That these early experiences themselves must motivate and enthuse children, drive curiosity and make further investigation of their own learning, and that of others irresistable
  E.g.Science lessons must include exciting stiumulus (role play, letters from characters) and hooks to motivate and ask questions of children in topics.
- The necessity to develop all children's enquiry-based skills alongside the knowledge and understanding laid out by the National Curriculum programmes of study and support resources.
  E.g. In Science children carry out investigations themselves.
- The need for children to understand the relevance of their learning to the world in the past, present and future, and how this helps them find similarities and differences between their experiences and those of others locally and across the world.
  E.g. Each Science lesson is led by the children's questions, learning and experiences. Teachers should not be scared of deviating from the curriculum to answer real life questions.
- The need for children to reflect upon their learning an maintain an up to date record of changing understanding of concepts and constructs.
- The principles of enactive-iconic-symbolic (practical resources-images-codes and symbols) in developing conceptual understanding across project or topic and dealing with misconceptions and challenges in individual lessons.

- The value of feedback from teachers, teaching teams and peers in promoting positive learning behaviours. In Science the feedback and next steps need to relate to scientific concepts and learning not writing skills.
- The role of Science in promoting Rights' Respecting behaviour is through working in groups and respecting each other's ideas and opinions. It is also shown through gaining a wider understanding of the world.
- The specific needs of individuals and groups of pupils including those with SEN, EAL or disadvantaged as highlighted in IEPs, Behaviour Plans, EHCPs and other records of professional, parental and pupil consultation.
  In Science the focus for assessing children should always follow Science assessment criteria rather than their recording and literacy skills.

5. Teaching & The Learning Experience

Science lessons at The Palmer Academy offer great learning experiences every day by ensuring that:

- The classroom environment supports the development of autonomy and independence when choosing and using independent resources.
  There must be a dedicated Science display with vocabulary and a true/false/always/never line. The classroom must also have some practical Science resources availaible for children to interact with.
- Learning walls and other displays make links between concepts, sign post new areas for investigation and celebrate achievement
- Dialogue at all levels promotes the sharing of ideas between staff, pupils and peers.
- There is a balance between teacher direction, independent tasks, group collaboration, practice and reflection time to ensure that new concepts are thoroughly understood.
- Key questioning ensures that children feel confident to talk about their ideas and that misconceptions are addressed appropriately
- Differentiated support informs routines, tasks and resource provision to enable all children to make good progress
- Children are prompted to record their learning and reflect upon their own prior learning and that of others to share good ideas and challenge differences of opinion.
- Children are expected to wear labcoats for their Science practical investigations to create engagement and make it a realisitic experience.

6. Marking, Feedback, Assessment & Reporting

- Children receive feedback in line with the school's Marking and Feedback policy every day to ensure that achievement is celebrated, learning is consolidated and next steps for learning are highlighted and responded to.
- Next steps, and the dialogue surrounding them, are clearly visible in each child's Science book at all times and relate to Science learning not just literacy.
- Teachers maintain a routine awareness of whether children are likely to be assessed as below, within, or above expectations at the end of each academic year and whether their progress from their starting points in Science is below, on-track or better than expected.
- This information is recorded in the school's online tracking system, O-track, and is discussed alongside more qualitative evidence of progress and attainment in consultations with pupils and parents at fixed times during the year. These records also contribute to conversations with school leaders as part of the quality assurance monitoring of the school.
- Children particpate in statutory end of Key Stage assessments in the Summer term of Year 2 and Year 6.
- Parents receive a report at the end of the year celebrating their child's successes in learning Science alongside an indication of progress and attainment against local and national expectations.

7. Celebrating success, sharing strengths and communication key information

- All information about Science for teachers is held on the schools shared network drive.
- Each year group publishes the projects and topics on the school website, alongside links to any online resources that will be investigated across each academic year. See year group, curriculum and learning wall pages at www.thepalmeracademy.com.
- Day to day updates of exciting events and news are posted to twitter @R2PalmerAcademy.
- Whole school trends in strengths and areas for development in the teaching and learning of Science at The Palmer Academy inform the schools self-evaluation (SEF) and strategic development plan (SDP). A summary is published in a termly SEF for parents.
- Teaching teams, phase leaders, subject leaders and SLT analyse pupil performance in Science on a termly basis, paying close attention to and making good use of developments in:

    - The proportion of children demonstrating knowledge, skills and understanding at age-related expectations
    - The proportion of children making good and/or better progress
    - Comparisons between key groups: boys, girls, those economically disadvantaged, with SEN, EAL, and other children
- The Science leadership team report key information, including that above,to governors, including the Science link governor, as part of the governor monitoring timetable.

8. Subject Leadership Team

Miss Fernandez and Mrs James

9. Appendices

- Investigations
- Example of quality marking and feedback
- Photos of investigations
- Links to useful wesbite for investigation ideas

Last Updated: 21st September 2015