Putnoe Primary School

Science Policy

1. Aims and Objectives:

1.1 We live in an increasingly scientific and technological age where children need to acquire the knowledge, skills and attitudes to prepare them for life in the 21st century. We, at Putnoe Primary School believe that the teaching of science develops children's interest and curiosity about the world they live in and fosters a respect for the environment.

1.2 Through the framework of the National Curriculum, science aims to:

- Equip children to use themselves as starting points for learning about science, to build on their enthusiasm and develop a natural sense of wonder about the world.
- Develop through working scientifically the skills of observation, prediction, investigation, interpretation, communication, questioning and hypothesizing.
- Improve precise measuring and ICT skills.
- Encourage and enable pupils to offer their own suggestions, be creative in their approach to science and to gain enjoyment from their scientific work.
- Enable children to develop their skills of co-operation through working with others, to encourage where possible ways for children to explore science in forms which are relevant and meaningful to them.
- Teach working scientifically, through contexts taken from the National Curriculum for science.
- Encourage children to collect relevant evidence, to question outcomes and to persevere.
- Encourage children to treat the living and non-living environment with respect and sensitivity.
- Stress the need for personal and group safety by the correct usage and storage of resources.
- To enable children to appreciate that we do not always know the answers and results when working scientifically.

2 Teaching and Learning Style

2.1 Our principle aim is to develop children's knowledge, skills and understanding in science. We do this through whole-class teaching and working scientifically. We have developed 9 Key Principles, which are:

- Children being fully engaged in their learning
- Scientific Vocabulary is understood and used correctly in lessons
- Children are excited, curious and ask questions
- Children relate their everyday experiences to their Science learning and recognize that Science is everywhere
- Children have opportunities to develop their thinking skills
- Teachers use outdoors as a platform for children's learning
- Children can investigate their own ideas and explore for themselves whilst keeping safe
- Children talk about previous investigations completed
- Children use talk partners and small groups to plan out investigations, have hands-on experience, record what they see and draw conclusions.

We use a variety of teaching and learning styles in Science lessons. Wherever possible, opportunities will be provided to develop skills and gain understanding of scientific concepts through first-hand experience in a climate that encourages curiosity, perseverance, reflection and co-operation. At the beginning of each science lesson children recap prior learning to retain previous knowledge and address any misconceptions. Children have the opportunity to use a

variety of data, such as statistics, graphs, pictures and photographs. Learning will be enhanced and made relevant through educational visits and specialists visiting the school. Children use ICT in science lessons where it enhances their learning. They take part in role-play and discussions and they present findings to the rest of the class. They engage in a wide variety of problem-solving activities, for example, researching a local environmental problem or carrying out a practical investigation and analysing the results.

2.2 We recognise that there are children of widely different scientific abilities in all classes. We ensure that all children receive suitable learning opportunities by matching the challenge of the task to the ability of the child. We achieve this in a variety of ways by:

- Setting common tasks which are open-ended and can have a variety of responses
- Setting tasks of increasing difficulty (we do not expect all children to complete all tasks)
- Grouping children by ability in the room and setting different tasks for each ability group
- Providing resources of different complexity, matched to the ability of the child
- Using teaching assistants to support the work of individual children or groups of children

3 Science curriculum planning

3.1 The science curriculum is covered from the Department of Education national scheme of work which is taught through discrete science lessons. Teachers adapt their planning so that they can make use of our local environment.

3.2 We carry out our science curriculum planning in three phases: long-term, medium term and short term. The long term plan maps out the Department of Education unit of work to be studied alongside Target Tracker, which is our assessment tool. The science subject leader devises this plan alongside teaching colleagues in each year group.

3.3 Our medium term plans are based around the national scheme of work for science. It also includes aspects of **Global Learning** where children learn about sustainable development. At the beginning of each half term, children begin a new science topic. It is the Science Co-ordinator's responsibility to review and update plans when necessary.

3.4 The class teacher is responsible for writing the daily lesson plans for each lesson. These plans list the specific learning objectives of each lesson. The class teacher keeps these individual plans. The class teacher is responsible for ensuring that the appropriate time is allocated to science on the timetable:

This is currently: KS1 – 1.5 hours per week and KS2 - 2 hours per week.

3.5 We plan topics in science so that they build on prior learning. We ensure that there are opportunities for children of all abilities to develop their skills and knowledge in each unit. We also build on progression in the science scheme of work so children are increasingly challenged as they move through the school.

3.6 Teachers look for every opportunity to develop children's '4R's being 'resilience, reciprocity, resourcefulness and reflectiveness' within the teaching of science.

4 Foundation Stage

4.1 We teach science in reception classes as integral part of the topic work covered during the year. As the reception class is part of the Foundation Stage National Curriculum, we relate the scientific aspects of children's work to the objectives set out in the Early Learning Goals (ELGs) known as, 'Knowledge and Understanding of the World.

5 Inclusion: SEN & A,GT

5.1 In school we aim to meet the needs of all our children by differentiation in our science planning and in providing a variety of approaches and tasks appropriate to ability levels. This will enable all children with learning and/or physical difficulties to take an active part in scientific learning and for the more able children to develop their skills to achieve the goals they have been set.

5.2 **SEN:** Some children will require closer supervision and more adult support to allow them to progress. When progress falls significantly outside the expected range, the child may have special educational needs. Our assessment process looks at a range of factors- classroom organization, teaching materials, teaching style, differentiation: so that we can take some additional or different action to enable the child to learn more effectively. This ensures that our teaching is matched to the child's needs.

Intervention through School Action and School Action Plus will lead to the creation of Support Plans for children with special educational needs. The Support Plans will include appropriate and specific targets relating to science.

5.3 **GT:** Some children will demonstrate the ability to work at a more able level. These children will be stretched through more challenging activities by participating in enhanced and enriched activities; more able children will be able to progress to a higher level of knowledge and understanding appropriate to their abilities.

6 Assessment and Record Keeping

6.1 Assessment for learning is continuous throughout the planning, teaching and learning cycle. Teachers make frequent notes on the evaluation part of their lesson plan.

Teachers use formative assessments continuously in KS1 and KS2 using a variety of methods:-

- Observing children at work, individually, in pairs, in a group, and in classes
- Questioning, talking and listening to children
- Considering work / materials / investigations produced by children
- End of unit assessment tests or assessments for KS2
- Children's progress is continually monitored and tracked throughout their time at Putnoe Primary School using our assessment tool Target Tracker.

6.2 Children's work is assessed in science by making informal judgements as we observe children during lessons. On completion of a piece of work, the teacher marks their work and makes comments where necessary; this might include questions or statements to support children's independent learning.

6.4 The teacher uses all of the above in relation to the National Curriculum to give a level of attainment. The teacher records children's attainment on Target Tracker and then the Subject Leader analyses the data and passes this information on to the next teacher at the end of the year.

6.5 Children are teacher assessed at the end of KS2 unless the school is moderated. This end of Key Stage level is reported to the child's next school and to parents.

7 Monitoring and Evaluation

7.1 Monitoring standards of children's work and the quality of teaching in Science is the responsibility of the Science Subject Leader and the Senior Leadership Team. The work of the subject leader also involves supporting colleagues in the teaching of Science, being informed about current developments in the subject, and providing a strategic lead and direction for the subject in the school.

7.2 The subject leader provides the head teacher an analysis of assessment data each term with key trends within year groups.

7.3 At the end of each year the Subject Leader gives the head teacher an annual summary report in which they evaluate the strengths and weaknesses in science and indicates areas for further improvement.

7.4 Twice yearly the Subject Leader conducts a whole school book scrutiny to monitor marking and feedback and evaluate children's progress.

7.5 The monitoring and evaluation process informs the one year and three year Subject Development plan.

8 The contribution of science to teaching in other curriculum areas

8.1 Literacy

Science contributes significantly to the teaching of English in our school by actively promoting the skills of reading, writing, speaking and listening. Some of the texts children study within Literacy are of a scientific nature. The children develop oral skills in science lessons through discussion and through recounting their observations and enquiries. Written skills are developed through writing reports, projects and recording information.

8.2 Mathematics

Science contributes to the teaching of Mathematics in a number ways. The children use weights and measures and learn to use and apply number. They estimate and predict when working on investigations and develop the skills of accurate observation, pattern spotting and recording events. They use number and analysis in their results and interpret tables and graphs.

8.3 Computing

Children use Computing in science lessons where appropriate. They use computing to research various concepts and scientists, they also record, present and interpret data, using data loggers and iPads.

8.4 Personal, social and health education (PSHE)

Science makes a significant contribution to the teaching of PSHE. For example, the subject matter lends itself to raising matters of health and social welfare. Children benefit from the nature of the subject as it gives them opportunities to take part in debates and discussion.

Mental Health and Well-Being: Within the Science curriculum, children learn about the importance of exercise and healthy eating and PSHE helps children to make the right choices now and in their later life. They are encouraged to participate in group discussions and investigations, while feeling that they are being listened to and have a sense of ownership.

8.5 History and Geography

The curriculum content of science covers many areas of the Humanities. In science children learn about famous scientists in the past and their impact. They also broaden their understanding about planet Earth, for example understanding the water cycle and forces in nature.

Date and Signed: ……

Date to be reviewed: 15.06.19