THE QUEENSWELL FEDERATION

SCIENCE POLICY

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Rationale

At The Queenswell Federation, we believe that science is an area of the curriculum that draws on children's natural interest and curiosity in the world around them. We hope that, through good quality teaching and encouraging the children to explore scientific concepts, we can create a sense of awe and wonder in children's scientific learning. High quality teaching and learning takes place in science lessons when all the children are actively involved in investigative tasks and are given opportunities to discover the answers to their own questions through observations, questioning and using their five senses. Through Science, the children should develop a sense of excitement and curiosity about natural phenomena and be provided with appropriate resources that allow them to explore different topics.

Equalities

At The Queenswell Federation we believe it is the right of all pupils, regardless of their gender, ethnicity, physical ability or linguistic, cultural or home background to have access to high quality learning experiences in a stimulating and supporting environment, where prejudice and stereotyping are challenged.

We recognise that certain groups and individuals may be discriminated against and therefore are strongly committed to positive action to remove and challenge discrimination in all aspects of the Federation and its work. The importance of staff awareness regarding the dangers of preconceived expectations based on stereotypes is addressed when teaching science.

Aims

The aim of the science curriculum is to:

- Promote children's natural curiosity and positive attitude to nature and the world around them.
- Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics.
- Provide the children with the opportunity to learn through first hand experiences to play, explore, observe and test equipment and materials.
- Develop understanding of the nature, processes and methods of science through different types of science enquiries that help pupils to answer scientific questions about the world around them.
- Equip pupils with the scientific knowledge required to understand the uses and implications of science, today and for the future.

Objectives

Through our science teaching and play based experiences in Early Science, the children will develop their skills in:

- Observing
- Raising and investigating questions

- Predicting and hypothesising
- Planning and carrying out investigations
- Measuring and recording
- Evaluating and concluding
- Communicating
- Identifying similarities and differences, patterns and change
- Applying mathematical knowledge
- Describing processes and characteristics using scientific vocabulary

Implementation

The curriculum is implemented through both direct teaching and a cross curricular approach.

Progression of Themes

EYFS	Y1	Y2	Y3	Y4	Y5	Y6
WORKING SCIENTIFICALLY – Develop independence in planning investigations.						
Understanding the World - The world: know about similarities and differences in relation to places, objects, materials and living things. Talk about the features of immediate environment and how environments might vary from one another. Make observations of animals and plants and explain why some things occur and talk about changes.	Plants – tree and plant identification and basic structure	Plants – observe and describe needs and growth	Plants and Flowers Seed dispersal/plant parts and function	Living things and Habitats – classification keys /life cycles / reproduction	Earth and Space Day/night Earth Sun Moon	Evolution & Adaptation / Classification
	Animals – identify and describe, Humans – body and the senses	Animals, including humans – basic needs, growth/life cycles, staying healthy	Animals Skeletons and nutrition	Sound – sound source / pitch / volume	Forces – Gravity / friction & resistance / levers	Properties of Materials - reversible & irreversible changes.
	Everyday Materials – identify, name, describe and compare simple properties	Use of everyday materials – suitability of materials	Rocks and Soils Fossils / rock types	Electricity – conductors / insulators – simple circuits	Human body biological systems	Revision
	Seasonal Changes- observe and describe	Living things and their habitats – living/not living,	Light Shadows and reflection	Animals – Food chains / teeth in humans and animals	Light – shadows & straight lines	Revision
			Forces Magnets	Materials – solids liquids gases/ changing state.	Electricity – changing components / voltage in circuit/ circuit diagrams	Revision
S R S E						

Planning

When possible, teachers will link a specific science topic to their Learning Journey and this will be shown on their theme plan. Teachers should ensure that key questioning and vocabulary are drawn out during lessons. Differentiation, including challenges to extend the more able, gifted and talented children should also be included as well as equal opportunities and inclusion.

Resources

All the resources required for science topics should be found in the science cupboard or in the science folder on the staff shared drive. Please ensure that the resources are returned to the cupboard neatly and that all books have been counted back in to ensure that none are lost. Resources must be checked prior to teaching to ensure all are available. If there is a resource that is needed, please inform the coordinator.

Computing Links

Wherever possible computing should be used to reinforce or develop ideas further. Some ways in which computing can be used are:

- Spreadsheets – To input data and create graphs
- Databases – To look at data and analyse it
- Internet – Researching/virtual experiments
- Sensors – Measuring and Recording
- iPad – gathering data and taking measurements.

Safety

Please refer to the Health & Safety policy.

Roles & Responsibilities

Teacher

- To implement the Science curriculum in line with the National Curriculum and school policy
- To ensure lessons are evaluated and assessments completed and/or adjusted according to the needs of individual children.

Science Leader

- To exemplify 'good practice' in the teaching of Science .
- To ensure lessons are evaluated and pupil progress is monitored, assessed and these assessments form the basis of the next steps in pupils' learning.
- To budget for materials to support the scheme of work and extra-curricular activities.
- To keep abreast of current educational research, publications and events in the field of Science.
- To complete an annual action plan for the development of Science across the school.
- To review and update the Science policy every four years.
- To maintain Science resources throughout the Federation.
- To keep parents up to date with Science

LMT

- To oversee and support the work of the Science Subject Leader.

Assessment and Record Keeping

After each session, work, including investigations, will be assessed to inform teachers which children have not achieved or have exceeded the objective. Teachers will use questioning, discussion and observation as their assessment tools during lessons and will use RouteMap for summative assessment. Timetables are monitored by the coordinator each term to establish which objectives have been covered and which have not.

Monitoring and Evaluation and Review

The monitoring, evaluation and review of our practice is regarded as integral to achieving a whole school ethos to the teaching and learning within the school. The LMT, together with Subject Leaders will evaluate the success of Science projects and initiatives and review the policy accordingly. Work in books is monitored each term by the coordinator and senior leadership team and teachers are given feedback.

The following aspects will be considered when evaluating the effectiveness of this policy:

Planning includes:

- Activities based around the aims of the National Curriculum
  - develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics
  - develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them
  - are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future
- Activities which can be adapted in terms of difficulty.
- Activities that develop working scientifically
- Resources to be used.
- A glossary of vocabulary
- Opportunities for children to present their work.
- Opportunities for children to review, evaluate and improve their work.

Teaching:

- Good understanding of subject knowledge is demonstrated.
- Clear instructions and use of relevant teaching points.
- High expectations evident and success criteria made clear to children re – behaviour, participation, and development of skills.
- Good organisation of class and resources
- Enthusiasm and praise used throughout the lesson, promoting children's self-esteem.
- Previous work is referred to and built on to extend knowledge.
- Opportunities for creativity and challenge evident in lesson.
- Opportunities for gifted and talented pupils to be extended.
- Appropriate use of teaching support assistants.
- The lesson is well paced.
- Opportunities for children to evaluate and reflect.

A good standard of learning has been achieved when children:

- Have met or exceeded the learning objectives, demonstrating progress in the skills learnt.
- Can use resources effectively and appropriately.
- Express a wish to further their development in an area of Science.
- Are able to make links between previous skills and ideas.
- Are able to listen to others, evaluate and refine techniques and ideas.

Outcomes – children demonstrate:

- An active role in Science through participation and involvement
- Taking responsibility for decision making in Science; planning, exploring, editing, making, presenting, playing, analysing, monitoring, researching and evaluating.
- A confident attitude towards Science through experiencing success.
- Secure knowledge of the background and history of Science .