



AVANTI COURT

PRIMARY SCHOOL

Science Policy

Ratified: April 2016

To be reviewed on: April 2018

AVANTI COURT POLICY STATEMENT FOR SCIENCE

Introduction

The following reflects our values and philosophy in relation to provision of all subjects including Science at Avanti Court.

“If we want to attain the sea of our aspiration we must persevere in the our goal and never be discouraged by the inevitable obstacles that come in our path. All impediments are like rocks in the river of life. We should flow with them and never give up. With the Lord’s mercy there is always a way”

By HH Radhanath Swami

The nature of Science

It is our aim at Avanti Court Primary School to ensure that all children are given the opportunity to observe, record and draw conclusions about the world around them. Science should be an enjoyable and rewarding experience for children as they use their independence to allow for the learning to unfold. Science is not prescriptive and here at Avanti Court, children will be given the freedom to use their skills of observation, prediction and interpretation through varied challenging investigative activities to reach their own scientific conclusions. This policy outlines the teaching and learning of Science at Avanti Court Primary School. The implementation of the policy is the responsibility of all teaching staff and will be monitored by the Science Subject Leader and Head Teacher.

Aims

We want to develop children who:

- Enjoy the subject and learn it with a sense of achievement.
- Are observant, curious and caring about the environment.
- Are holistic in their thinking and can link their learning of science to other subjects such as maths, English and PRE.
- Can work well collectively, listening to and valuing the opinions of others but also to work independently with confidence.
- Can gain a secure foundation of knowledge, skills, concepts and the language of science.
- Are prepared to get things wrong (show humility), to learn from these mistakes, and to try again.
- Can develop an understanding of science through a process of enquiry and experiment.
- Can develop an ability to think clearly and logically with independence of thought, flexibility of mind and perseverance.
- Develop an ability to express ideas fluently and to reason.
- Can observe, question, hypothesise, plan, measure, construct a fair test, collect evidence, communicate and draw conclusions using scientific language;
- Are independent thinkers, who show appreciation to past, present and future scientific enquiry but are not afraid to challenge the status quo.

Planning

The New Curriculum has been implemented in all year groups from 2015 -2016. The teaching of Science at Avanti Court is based on the new National Curriculum objectives and the early Years Foundation Stage schemes of work. Avanti Court Primary School are committed to raising the profile of science planning, teaching and learning, assessment and investigative work and therefore have purchased two schemes of work; Collins Snap Science and International Primary Curriculum (IPC). A science overview is available to all year groups to track both coverage of science in both KS1 and KS2 and meeting the requirements of the new national curriculum. To this end, science will be taught discretely in all year groups as of September 2016.

Teaching and Learning

Our requirements on Teaching and Learning is encapsulated in our Teaching and Learning policy. However, at Avanti Court Primary we strongly value the practical nature of science and promote scientific learning through play and first hand experience. Practical Science lends itself to the development of investigative skills and draws upon strong mathematical links for example: data handling, measurement and pattern recognition. Pupils where appropriate are given opportunities to develop their Computing Skills through the study of science.

All lessons have a clear learning objective, which is shared and reviewed with the pupils. A variety of strategies, including key questioning is used throughout science lessons to develop children's understanding.

Differentiation

Every effort is made to ensure that science investigations are accessible to all children within the class. Children should be provided with work, which challenges their thinking to ensure they reach their full potential. This will be reflected in the activity set but also the high order questioning led by the teacher/TA. Planning should clearly reference how the activity has been amended or extended for children of different experiences. As the school expands, we will provide opportunities for more experienced pupils to support children in lower years.

Expectations in science

- By the end of **Key Stage 1** at least 86% of children will be working at age related expectations.
- By the end of **Key Stage 1** at least 35% of children will be working at mastery level with greater depth.
- By the end of **Years 4 and 5**, at least 86% of children will be working at age related expectations.

Curriculum Provision

In the Early Years Foundation Stage science activities are available daily with additional experiences provided by Collins Snap Science. Observations of children's interests and activities also inform planning and provision for this area of learning.

At Avanti Court Primary Primary Science is an important part of the curriculum and pupils across both Key Stages must undertake, at a minimum, the Government recommended learning time of: Key Stage 1 and hour and 30 minutes per week and in Key Stage 2, 2 hours per week. This is non-negotiable. The school will follow the Collins Snap Science scheme of work and where appropriate and relevant use IPC for to enhance the learning experience for children.

Planning takes into account that the school places a high emphasis on the development of pupil's skills of Working scientifically as detailed in the national curriculum. Each topic allows for the appropriate development of scientific enquiry, through parts of an investigation or the whole process. This will enable pupils to in KS1 and in more depth in KS2 to:

- Ask questions and recognise that they can be answered in a variety of ways
- Predict and consider the appropriate apparatus to be used through close observation
- Observe, measure and undertake tests, simple, comparative, fair and those that involve controlling variables (Upper KS2)
- Identifying and classifying

- Use their observations and understanding to answer questions
- Gather, record and present (KS2) data to support them in answering questions.
- Identify scientific evidence that has been used to support or challenge ideas or arguments (Upper KS2).

ICT

ICT including computers, sensors and cameras play an important role in developing scientific skills. Throughout all key stages pupils will have the opportunity to use ICT for data handling, interpreting results and findings and when collating data.

The Learning Environment

Every classroom across the school has a science display, which must include key vocabulary and reflect the importance of science within the curriculum. Books and resources should be easily accessible to pupils to support and extend their learning. Where possible, classrooms should also have a science table allowing for children to physically access resources related to their science topic and also ask questions in relation to their learning.

Inclusion and Equal Opportunities

Planning and teaching takes into account gender, race and special educational needs. Both human and physical resources are referenced on planning to ensure inclusion. A range of teaching strategies are deployed to ensure all children make progress. At Avanti Court Primary School we ensure that:

- Science is taught within the guidelines of the school's Equal Opportunities Policy and Safeguarding Policy
- All children have the opportunity to gain scientific knowledge and understanding regardless of race, class, gender or ability
- Our expectations as teachers do not limit pupil progress and achievement
- We teach science in a broad global and historical context, using examples and perspectives from people from many different backgrounds (Collins Snap Science and IPC)
- We value science as a vehicle for the development of language skills
- In our teaching, science has links to English and Maths
- Pupils learn through first hand experiences as much as possible
- We develop children's understanding through asking and encouraging challenging questions
- We display visuals to support children's understanding e.g. providing a symbol or a diagram to reinforce scientific language.

Teaching Assistants

TA's are directed by the class teacher and are referred to on planning. TA's are able to refer to the teacher's planning which will reference who they will support and how. TA's are encouraged to provide feedback to the class teacher regarding progress to inform future lessons, planning and resources.

Assessment

Each half term, for years 1-5, a science level is recorded on Target Tracker, which allows the subject leader to track age related progress in Science across the school. Formative assessment is ongoing and involves the children. Summative assessment takes place using the: Collins Snap Science which is then recorded onto Target Tracker. The school is also expecting to purchase the Rising Stars resource for assessment by summer 2016.

The Early Years Foundation Stage class teacher will record progress of pupil's 'Understanding of the World', against the Development Matters and Early Learning Goals criteria which is then recorded on the Foundation Stage Target Tracker. In the Early Years Foundation Stage Curriculum assessment is ongoing. Observations inform next steps in planning and teaching. Progress over the Year is recorded in each child's This may include photographs, samples of work and transcriptions of children's learning.

At the end of Key Stage 1 and 2 Teacher Assessment (TA) is reported to the Local Authority (LA). Science and this ensures consistency in TA.

The main reason for assessment is to enable the teacher to match learning to the abilities and needs of all pupils so all pupils make progress.

Assessment and Scientific Enquiry

Scientific Enquiry is excellent for Assessment for Learning (AFL) and speaking and listening opportunities but can be difficult to assess. To ensure children make progress in Working Scientifically (WS) teachers must review and assess what has been learned after every science lesson, not just science procedures but also science ideas and knowledge.

At Avanti Court Primary we promote an AFL approach for Scientific Enquiry. This approach is effective because:

- Teachers use key questions throughout the investigation to gauge children's understanding
- During each unit, teachers plan for at least 2 investigations to take place. This is to be recorded by the children (in most appropriate way to level and age expectations). This may or may not be a full investigation. The IPC curriculum has been designed with a practical hands on foci. Where appropriate, teachers will use Collins Snap Science to ensure that all scientific skills are being met.
- Teachers are aware of what the children are expected to do for each year group/level.

Resources

There is a communal science storage area in the main building with resources and equipment stored in topic boxes. Class teachers and teaching assistants are responsible for the collecting and returning resources. Breakages and shortages of stock must be reported to the Subject Leader. The Subject Leader is responsible for the auditing of resources.

Monitoring

The Subject Leader with support from the Core Leadership Team (CLT) is responsible for monitoring the standards of teaching and learning of science throughout the academic year to raise the overall quality of teaching and levels of pupil attainment. Monitoring will take the form of observations, discussions with children, analysis of pupil data and through the monitoring of planning and children's work. The Subject Leader is responsible for identifying strengths in the area of science and areas for development, which features on the subject's action plan.

INSET and Professional Development

The Subject Leader is a role model for all staff and will provide feedback to teachers on all monitoring and

standards. The needs of the school staff will be collated through monitoring, observations, the analysis of data and through formal and informal discussions. Staff attending CPD in science, are expected to disseminate useful points with the rest of the staff and it is the Subject Leader's responsibility to monitor the impact of such training.

Health and Safety

The Safe use of equipment is promoted at all times. The school's Health and Safety policy should be consulted for details regarding: electrical equipment, wet areas, candles and the use of tools. A risk assessment should be carried out before any activity, which may pose a risk to pupils and adults particularly those involving: candles, tools, hot water, chemicals (e.g. washing up solutions), wet areas, foods, use of the environmental area etc. Completed risk assessments must be shared with the Subject Leader and saved onto Teacher Resources, allowing for all staff to access as appropriate. Also, hard copies of risk assessments will be kept in the Science resource cupboard, located in the main building.

Any animals or insects used for study must be treated with respect and returned to their natural habitat as soon as the activity is complete. Leaves and berries of a poisonous nature should be avoided in the classroom.

PSQM

Avanti Court Primary School will take part in the Primary Science Quality Mark (PSQM) over the academic year 2015 -2016. The Primary Science Quality Mark is an award scheme to enable primary schools across the UK to evaluate, strengthen and celebrate their science provision. Schools can achieve bronze, silver and gold awards. Avanti Court will work towards achieving the Silver award.

The purpose of PSQM will be to raise the profile of Science at our school by systematically supporting the evaluating process (self-assess, action planning, tracking and monitoring, implementation and reflection) and developing all aspects of science teaching and learning across the school.

The PSQM programme is also highly recommended by subject leaders in outstanding schools, head teachers, Ofsted, the Royal Society, The CBI and other members of the primary science community.

Role of the Subject Leader

The role of the Science Subject Leader is to:

- Coordinate and implement the school science action plan and review progress against targets – see PSQM
- Monitor planning and assessment
- Collect and moderate samples of work – linked to PSQM
- Analyse data and make predictions on expected outcomes – linked to PSQM

- Lead INSETs to ensure effective CPD for all staff
- Support staff with their understanding of scientific concepts
- Order appropriate resources
- Keep up to date with the latest initiatives and feed this into science across the school – see PSQM
- Working closely with the designated hub leader for the Primary Science Quality Mark – see PSQM
- Ensure ICT is being used affectively to enhance the teaching and learning of science across the school
- Encourage creative planning and teaching (Use of both IPC and Collins Snap Science)

Educational Visits and Visitors

The school recognizes the importance of curriculum enrichment, which can be provided through educational trips to places such as: The Science Museum, James Leal Centre and more importantly the natural environment.

Review

The Head Teacher and staff will review this policy during the summer term 2018. Any suggested amendments will be presented to the Governing Body.

Appendix 1

Practical Investigations

Open ended investigations should be planned and carried out in line with the following criteria:

- Children should feel secure in many aspects of the topic before carrying out an investigation
- Investigations should be planned, the materials selected and the method of recording discussed before starting
- When appropriate children will be encouraged to select their own equipment and justify their choice
- Methods for recording should be as creative as possible and suited to individual pupil's needs

- The teacher must ensure that pupils understand what they are expected to record
- Link investigations to key questions

Planning Stage of Working Scientifically

When planning for Working Scientifically teachers need to think about:

- Giving children the opportunity to predict what might happen and go back to these predictions after the investigation to evaluate and reflect
- Modelling the planning process
- Giving children plenty of opportunities to lead the investigation and ‘try things out’
- How shared writing and discussions as a group or as a whole class can be used when writing up part of an investigation-whole investigations or part investigations do not have to be written up by every child all the time
- Reinforcing that different ways can work for the same investigation and that all methods do not have to be exactly the same
- Using the time when children are engaged in planning to question children to assess children’s thinking and planning skills
- Making it clear to children that they need to think about the data they need, how they are going to collect this and why it is important.
- Allow children time to evaluate each-other’s plans and identify strengths and weaknesses-this demonstrates to children that there is not always one single line of enquiry
- Giving children the opportunity to add and to edit their plans once discussion has taken place

Gathering and interpreting results of Working Scientifically

The teacher needs to think about:

- Allowing time to review data-how would this change the way they planned in the future?
- Allowing time to address misconceptions and discrepancies
- Giving children the opportunity to interpret information presented in tables and a range of graphs and not just creating them
- Reminding children to refer to their results when writing conclusions
- Encouraging children to challenge each other’s scientific evidence.