

## Wilkinson Primary School Science Policy - Contents

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## **1)Introduction:**

|                         |               |
|-------------------------|---------------|
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| Date written:           | February 2021 |
| Approved (governors) on |               |
| Review Date             | February 2022 |

This document is the statement of the aims, principals and strategies for the teaching and learning of Science at Wilkinson Primary School.

Science at Wilkinson should present an exciting challenge to all children regardless of race, gender or disability. Regard should be kept at all times to Special Educational Needs and Disability (SEND) and differentiated learning. Science is a core subject in the National Curriculum.

## **Our Vision:**

Science lessons at Wilkinson Primary School are about inspiring the children with a sense of awe and wonder through first hand practical experiences. We give the children time to explore equipment, materials and the environment to come up with their own thoughts and questions. Our aim is to develop the children's natural curiosity about the world around them and to develop a set of skills and attitudes such as open-mindedness, perseverance, collaboration, observation and questioning, which are useful skills for life. From watching chicks hatch in Foundation to building complex electrical circuits in Key Stage 2 the children are positive and enthusiastic about science and can see its applications in everyday life. We have children with aspirations to be a scientist and it is the lifelong interest that we want to nurture in our rapidly developing scientific world.

## **2)Science intent:**

In Science, all our children will aspire to use science to explain, predict and analyse the natural world; building key knowledge and concepts, being excited and curious about natural phenomena and understanding methods, processes and uses of science.

## **What is Science?**

Science is a body of knowledge, which is built up through experimental testing of ideas, and which is organised in a way that makes it easy to use. Science is also a methodology, a practical way of finding reliable answers to questions we may ask about the world around us.

At Wilkinson we believe the logical approach to science tasks supports other curriculum areas promoting key skills.

Pupils have the opportunity in science to develop the key skills necessary for learning

- Communication
- Application of number – data analysis, data collection, measurement
- IT through use of ICT tools
- Working with others
- Improving own learning by reflecting and evaluating work achieved
- Problem solving to answer specific questions

The fundamental skills, knowledge and concepts of the subject are categorised into 4 areas:-

Working Scientifically

Biology – Structure and function.

Biology – Evolution and inheritance.

Physical processes – Energy and Materials

Forces and their Effects

From the programmes of study in National Curriculum 2014 and updated 6<sup>th</sup> May, 2015, this is achieved by experiment and investigations from the Working Scientifically Programme of Study.

The purpose of this Policy for Primary Science are:-

- To provide School rationale for Science in the National Curriculum, which is available for the information and use of all interested parties.
- To ensure that there is a corporate view of a) the learning outcomes intended for the children through taught planned/tracked learning objectives b) The way in which progression in both processes and concepts is achieved.
- To assist teachers in effective delivery of the National Curriculum during Key Stages 1 and 2 and the Early Years Curriculum.

In reviewing this policy the following circumstances were considered:

- 1) National Curriculum 2014, Science Programmes of Study- updated 6<sup>th</sup> May, 2015 and The Early Years Foundation Stage Early Adopter Framework 2020/21.
- 2) The needs of the children within the School.
- 3) The need for all children to have a broad, balanced, differentiated Curriculum.

Therefore this Policy Statement forms a part of overall School Policy with regard to Equality of Opportunity and Special needs.

## **Aims and Objectives.**

- The content and skills of Science should be developed through a balance of investigation and experimental work in a structured and progressive way.
- Science should be inquiry led and concerned with the pursuit of better investigative strategies and more reliable knowledge about the physical and biological world.
- Science should offer an exciting challenge to children of all ages and abilities.
- Differentiation should ensure access for all pupils.
- Science should assist child to retain and develop their natural sense of curiosity about the world around them.
- Science should encourage children to develop a set of attitudes, which will promote scientific thinking, including open-mindedness, perseverance, objectivity and recognition of the importance of teamwork.
- Science should help to understand the nature of “scientific method” involving: meticulous observation, the making and testing of hypotheses, the design of fair and controlled experiments, the drawing of meaningful conclusions through critical reasoning and the evaluation of evidence.
- Science should help the children become effective communicators of scientific ideas, facts and data.
- Science should help the children begin to build up a body of scientific knowledge and understanding which will serve as a foundation for future enquiry.

## **3)IMPLEMENTATION**

The Scientific Approach

In order to develop an enquiry mind and a scientific approach to problems the following skills need to be developed.

| Process Category                         | Skills  |
|--|---|
| Problem solving                          | <ul style="list-style-type: none"> <li>a) using senses</li> <li>b) questioning</li> <li>c) classification</li> </ul>  |
| Collecting information and hypothesising | <ul style="list-style-type: none"> <li>a) predicting</li> <li>b) collecting information</li> </ul>  |
| Experimenting                            | <ul style="list-style-type: none"> <li>a) following instructions</li> <li>b) using apparatus</li> <li>c) estimating</li> <li>d) accurate measuring</li> <li>e) fair testing</li> <li>f) recording data</li> <li>g) repeating measurement when appropriate.</li> </ul> |
| Decision making based on evidence        | <ul style="list-style-type: none"> <li>a) interpreting data</li> <li>b) drawing inferences</li> </ul>   |
| Communication/Recording                  | <ul style="list-style-type: none"> <li>a) oral</li> <li>b) written</li> <li>c) tabulatory</li> <li>d) drawing</li> <li>e) graphing</li> <li>f) use of IT</li> </ul>   |
| Organisational skills                    | <ul style="list-style-type: none"> <li>a) ability to plan</li> <li>b) co-operate in a group</li> </ul>  |

Practical work in Science can be divided into a balance of:

1. Hypothesis/prediction
2. Observation
3. Recording results
4. Drawing conclusions

And will provide a range of skills for pupils through investigation or experimentation.

### **Classroom Management and Organisation**

Science is studied for approximately 2 hours per week (36 weeks)

Children should be given opportunities to work collaboratively, in a variety of groups, individually, and as a class. Children need to be trained in all aspects of handling science equipment safely. See Appendix 2.

There are various ways in which the children in class might be organised.

- 1) Whole class/demonstration lesson.
- 2) Science area/single group organisation.
- 3) Small groups with the same/similar experiences (at the same time)
- 4) Theme approach:- a) Various activities set out – one to be completed  
b) Rotate through all activities.
- 5) Daily assignment with extension activities in small groups.
- 6) Small groups – independent enquiry (children select areas for study in consultation with the teacher.) Groups organise and investigate themselves guidance from the teacher.

### **Differentiation**

- 1) Groups are usually of mixed ability with differentiation by role.
- 2) Relevant discussion is encouraged.
- 3) Groups are encouraged to communicate their findings in a variety of ways.
- 4) There is no specialist teaching in Science, it is taught by the class teacher.
- 5) In accordance with the SEND Code Of Practice 2014, and with recognised good practice, pupils with special needs receive work which is adapted and modified by the class teacher to suit their individual needs; this allows these learners to work and explore scientific concepts independently. Should support be needed this will be given as necessary in a way that enables them to explore the subject and problem solve for themselves.

#### **Such pupils include:**

Pupils with language/communication difficulties who are given support with reading and writing during Science lessons.

Pupils with particular ability and flair for Science who work more quickly through the Curriculum and are extended through the use of supplementary work and computer software.

6) **Equal opportunities for all pupils:** Activities must ensure that science is equally accessible to all pupils irrespective of their age, gender, ethnicity, disability, attainment and background.

7) **Children should be encouraged to develop multicultural themes;**

- \* An interest in people and places beyond their immediate experience.
- \* An awareness of cultural and ethnic diversity within our society, while recognising the similarity of activities, interests and aspirations of different people.
- \* Tolerance toward people who hold different values and beliefs.

**Wilkinson is committed to an inclusive education, which provides all pupils with the opportunity to meet their full potential.**



**Homework may be used to support Science through tasks such as:**

- 1) Finding out more about a topic or finding answers to questions posed in school through the use of books (libraries) and interviews with friends and family, Internet etc
- 2) (For older pupils) writing up the findings of Science experiments carried out at school.
- 3) Applying their knowledge and understanding to their own life experience.
- 4) Collecting data and information.
- 5) Practising some of the skills of investigative work, eg thinking about questions to ask about a topic and ways of finding out the answers.

**The emphasis in our teaching is on first-hand experience**

We encourage children increasingly to take control of their own learning. Our focus is on Working Scientifically of the National curriculum, thus:

- 1) Most study of Science is through practical investigative work.
- 2) Careful observation is fostered.
- 3) Resources are made readily available and accessible.
- 4) Pupils are encouraged to communicate their Scientific findings to others using a variety of methods including written or verbal reports and use of graphs or pictures.

### **4) Cross-Curricular Links**

There are many natural links and overlaps with other subjects such as English, Geography, Mathematics, Music and Technology. Every effort is also made to include working in the school grounds and in the local environment.

Commercially available schemes of work are available for teachers to “dip into” to help them plan their own programmes of work.

### **English**

Reading and writing are essential for the process of finding out and communicating an understanding of Science. Drama, discussion and role play are aspects of the programme of study for speaking and listening and are important ways for children to develop their understanding of science themes.

### **Mathematics**

There are many opportunities for children to develop mathematical skills in science lessons such as measuring and recording results in tables and bar charts.

### **Information Technology is a major resource, which is used in Science for:**

- 1) Communicating information (word processing and graphics/drawing packages)
- 2) Handling information (databases and data capture equipment)
- 3) Modelling (simulations and spreadsheets)
- 4) Retrieving information – Internet, Espresso, So Simple Science



## **5) Early Years:**

- Pupils build confidence to explore science purposefully to support their learning for all Early Learning Goals as appropriate.
- Pupils in The Early Years will have experiences to explore science indoors, outdoors and through role play in both child-initiated and teacher-directed time.
- The Early Years staff use the EYFS Early Adopter Framework to plan for science (Understanding the World) in a range of contexts.
- Pupil's experience of early scientific skills will be developed in a practical hands-on manner.
- Pupils will explore the natural world around them, making observations and drawing pictures of animals and plants. They will know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. They will understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

## **6) Strategies for Ensuring Curriculum Coverage, Progress and Continuity**

### **Planning in Science is a process in which all teachers are involved, wherein:**

- 1) The foundation for curriculum planning is the Whole School Development Plan, developed through a process of collaboration between staff, and approved by governors.
- 2) Planning for Science is reviewed at least half a term in advance dictated by the current year's overview. Medium term planning is done on Wilkinson Primary School planning templates.
- 3) Staff are currently involved in trialing a bespoke Science Scheme to fit the needs of our school. Attention will be paid to the "2016 Key Stage Teacher Assessment Performance Descriptors" to assess pupils' ongoing progress and attainment to arrive at judgements which are consistent with national standards.
- 4) Monitoring of Science lessons and of pupils' books and feedback to the staff ensures consistency of approach and of standards.

## **7) Roles and Responsibilities**

### **The Role of the Co-ordinator**

- To take the lead in policy development and the monitoring of schemes of work designed to ensure progression and continuity in Science throughout the School.
- Support colleagues in their development of detailed work plans, their implementation of the Scheme of Work and in assessment and record keeping activities.
- Review end of unit assessment for overview of school attainment to inform target setting and planning implications, to support end of key stage colleagues with TA through supported Year group materials.



- Monitor Progress in Science and advise the Headteacher on action needed.
- To meet with the SLT to discuss teaching and new ideas.
- Monitoring to be carried out through regular discussions meetings and through observations of lessons wherever possible.
- Take responsibility for the purchase and organisation of central resources for Science.
- Keep up to date with developments in Science education and disseminate information to colleagues as appropriate.
- To arrange in-service support.
- To liaise with other Co-ordinators, when necessary.
- Central resources in Science are the responsibility of the Science Co-ordinator who has a small budget available. It is important that the staff assist the Co-ordinator by:
  - Returning all equipment promptly.
  - a) Informing the co-ordinator of anything damaged or in need of replacement.
  - b) Informing the co-ordinator, well in advance, of any item of equipment required that are not already in stock.
  - c) Teaching children the correct use of equipment.

### **The Role of the Teacher**

- 1) To monitor progress of pupils.
- 2) To keep assessment profiles for pupils.
- 3) To have/apply good subject knowledge.
- 4) To interest the children and show enthusiasm.
- 5) To provide situations where children can identify problems.
- 6) To encourage the asking of questions.
- 7) To encourage the children to suggest explanations and predictions and to guide the formulation of hypotheses, which can be fairly tested.
- 8) To encourage and guide the design of a fair test.
- 9) To provide the practical means for carrying out tests and investigations.
- 10) To encourage and guide the children in recording observations and measurements.
- 11) To encourage the making of decisions on the basis of evidence.
- 12) To encourage children to look for and discuss applications for scientific concepts which have been discovered.
- 13) To give access to book and other resources relating to investigations.
- 14) To record and evaluate children's progress and review their work.
- 15) To use and apply scientific vocabulary appropriately.
- 16) To implement/monitor good classroom management and safety Regulations of which the following should be born in mind and adhered to. (See Appendix 1)

Stimulation for lessons can often be improved by the use of animals, insects or plants as visual resources. However, as can be seen from the above list use of animals does require stringent safety

guide lines and permission to keep animals permanently as pets SHOULD BE SOUGHT FROM THE HEADTEACHER. For further information consult guidelines from LA Health & Safety File section concerning “Animals in Schools”.

All staff need to be familiar with other aspects in the policy on Health and Safety by Wolverhampton City Council. This folder may be found in the Secretary’s office.

**Throughout school teachers should encourage language and communication skills so that children can:**

- Develop language skills through talking about their work and presenting their own ideas using sustained and systematic writing and recording of different kinds:  
e.g use scientific language

**Teachers should encourage positive values and attitudes so that children:**

- Work with others, listen to each other’s ideas, and treat them with respect
- Have opportunities to consider their own attitudes and values, and those of other people.
- Develop respect for evidence and critically evaluate ideas which may or may not fit the evidence available.

### **8)Assessment**

**Feedback to pupils about their own progress in Science is achieved through the marking of work. Effective marking:**

- 1) Should involve discussion between the child and the teacher.
- 2) Aims to help children learn by encouraging them to think critically about what they achieved.
- 3) Of written work is used sensitively and with discretion so that a child can assimilate a limited number of corrections at one time – this will vary according to age and ability.
- 4) Formative assessment is used to guide the progress of individual pupils in Science. It involves identifying each child’s progress in each area of the Science Curriculum, determining what each child has learned and what therefore should be the next stage in his/her learning. Formative assessment is mostly carried out informally by teachers in the course of their teaching.

**Suitable tasks for assessment include:**

- 1) Small group discussions usually in the context of a practical task.
- 2) Specific assignments for individual pupils.
- 3) Individual discussions in which children are encouraged to appraise their own work and progress.

## Celebration of Success

### **Excellence in Science may be celebrated in display and performance including:**

- The mounting of the results of **Working Scientifically** on the wall in the classroom.
- Communication of Scientific findings during whole class plenary sessions.
- Creative outcomes – class books, assemblies, subject day/week, presentations.

## 9) Monitoring

The implementation of the Science Policy and guidelines are monitored by:-

- Science Co-ordinator through
  - Sampling of pupils' work and progress.
  - Checking record keeping and planning.
  - Dialogue with staff.
  - Pupil Interviews.
- Class teacher through
  - Ensuring that all planning and assessment is completed as described in the Science Guidelines.
- Senior Leadership Team through
  - Sampling children's work and assessments
  - Sampling records
- Headteacher through
  - Classroom observation
  - Checking of record keeping and planning
- Governors through
  - Liaison with the Head Teacher and Co-ordinator
  - Classroom observation
- LA and OFSTED
  - We take on board comments made by Inspectors.

## 10) Strategies for Recording and Reporting

As a core subject a programme of continual assessment should be planned throughout the topic areas. This should be done as individual, group or class activities and recorded appropriately.

Assessment needs to take into consideration:

- 1) The language and vocabulary used. A Learning wall with relevant vocabulary should be present in each classroom.
- 2) The context for assessing skills.
- 3) The purpose of assessment. Who is it for? Are we assessing what we set out to assess?

**Records of progress in Science kept for each child contain:**

- 1) A termly record of progress in each unit covered. (End of Topic tests and practical assessments)
- 2) A Science book/folder dated and annotated with teacher comments and containing work which shows achievement and progress.
- 3) Highlighted sheets in the ASSESSMENT folder showing red for working towards, yellow for expected, and green for exceeding age related expectations.

**Reporting to parents is done on a termly basis through interviews and annually through a written report. Reporting in Science will focus on each child's:**

- 1) Attitudes to Science.
- 2) Progress in **Working Scientifically**, the ability to investigate scientifically including the understanding of the nature of "scientific method" and the development of Science skills.
- 3) Formal summative assessment is carried out at the end of each Science Topic through the use of end of unit tests in all year groups from 1 to 6. Assessment at the end of a unit gives information of pupils understanding, at above or below national guide lines on expectation. The information for individuals is used for target setting and as a whole group to inform planning when moving on to follow on units to ensure suitable progression.
- 4) Pupils will complete a focused practical assessment for Working Scientifically using The Bath Spa focused investigations.
- 5) Tracking sheets are completed half-termly recording progress in both **Working Scientifically** and end of unit tests. These sheets are to be found in the science folder on "TEAMS".

### **11) Strategies for the Use of Resources**

**Most resources are stored centrally. They are the responsibility of the Science Co-ordinator who has a small budget available. (The financial commitment for Science will differ each year, details of which will be found in the SDP). These resources include:**

- 1) Sets of scientific instruments likely to be used sporadically by all classes, such as magnifiers, thermometers, spring balances etc.
- 2) Major expensive items such as the microscope and skeleton.
- 3) Pond dipping equipment.

- 4) Each classroom has a group set of magnifiers, magnets, torches, sand timers, stop watches, tape measures, spring balance and mirrors.

For the academic year 2020-21 Wilkinson Primary School will follow agreed topics on the "Science Yearly Overview". The Scheme is being developed in consultation with staff and is under continual review. A bank of resources has been built up (Found on TEAMS in the Science Channel) and is added to regularly. Collins Snap Science Resources are available to dip into and photocopiable resources and online resources are also available. The Early Years will follow the EYFS Early Adopter Framework 2020/21 and have agreed topics for each term.

The Science Scheme is supported by:

1. A wide variety of resources – equipment unit specific, and for experimentation.
2. Science Books including Collins Snap Science
3. KS1 and KS2 CGP Study Books.
4. Letts Science Series – Classrooms
5. Concept Cartoons – Resource Room.
6. A bank of PowerPoints and worksheets stored on TEAMS (Wilkinson Teaching Staff – Science).

The area around school is also rich as a natural resources for the study of Science. Good use should be made of

1. The school grounds
2. The local area
3. Changing weather conditions
4. Natural History Lecturing Service (Animal Man/Woman)
5. Visiting speakers/performers eg Mobile Planetarium, Theatre Companies.
6. Visits - Teachers may wish to consider the extent to which first- hand experience is available to classes in the light of their response to the following questions:
  - 1) What safety aspects are involved in the visit?
  - 2) Has a risk assessment been completed that complies to the school policy?
  - 3) Has the teacher undertaken a preliminary visit prior to the children's visit?
  - 4) Is a visit/visitor appropriate?
  - 5) Are there sufficient adults to supervise the children?

The school library can be used for books on Science based subjects and is used for reference.

**Consideration of health and safety issues is of the utmost importance in Science.**

**Guidelines (see appendix) are provided on:**

- 1) Appropriate handling of equipment and materials.
- 2) Appropriate storage of equipment and materials.

### **12) Extra-Curricular/Parental Involvement**

Extra-curricular clubs play a large and vital role in the life of Wilkinson Primary School. Science based activities will form a basis for some of these sessions.

All these activities provide valuable opportunities to link with the local community, parents and also to liaise with other schools. These opportunities will vary each year and will reinforce the fact to the children that Science is a key feature of everyday life.

Parents are encouraged to help their children relate their Science knowledge and understanding to their daily experiences.

### **Appendices include:**

- 1) Science Covid-19 Statement September 2020
- 2) Use of practical resources and social distancing between the teacher and pupils
- 3) Remote Education
- 4) Safety guidelines.
- 5) Classroom organisation considerations.
- 6) Centrally held resources for Science. (ongoing)
- 7) Science for children with special needs. (not included yet Mrs Bowen has hard copy)
- 8) Active Assessment: thinking, learning and assessment in science.  
(not included yet- Mrs Bowen has hard copy)

### **APPENDIX 1 SCIENCE COVID-19 STATEMENT SEPTEMBER 2020**

In Science lessons, teachers will follow Wilkinson Primary School Covid-19 Risk Assessment September 2020 and Government Guidelines.

Teachers will promote good hygiene and the thorough cleaning of equipment.

Here are the most pertinent sections of Wilkinson's Covid-19 Risk assessment that relate to Science lessons.

School avoids any activities which involve the passing of items around a class i.e. food making / tasting, artefact sharing, touching activities etc.

· although practical lessons (science) can go ahead if equipment can be cleaned thoroughly and the classroom or other learning environment is occupied by the same children or young people in one day, or properly cleaned between cohorts. (Coronavirus (COVID-19): implementing protective measures in education and childcare settings).

External Agencies will be allowed onto the school site following the correct procedures: Appointment to be made prior to visit, use of hand sanitiser on entrance to site, maintaining of social distancing.

· The school will contact every user and inform them of usage expectations:

· Workshops/peripatetic teaching/class projects from outside providers in some cases to be delivered remotely through video conferencing.



### **APPENDIX 2 -Use of practical resources and social distancing between the teacher and pupils**

*“From September 2020, we’re finally returning, as far as possible, to life as usual. One where schools deliver a broad, balanced and full curriculum. For practical subjects like science, D&T, and art, this means getting back to doing hands-on activities, investigations and enquiries. Using equipment is allowed because it’s essential for delivering the curriculum and to support learning in practical subjects. Planning and delivery of activities will continue to be different but much closer to normal. Thankfully, there isn’t a single set of rules that have to be slavishly followed. Instead there are guidelines that give you the freedom to structure your lessons in such a way that you are not forced to limit the learning of your children.”*

[Practical activities in a bubble](#), CLEAPSS

The above guidance from CLEAPSS makes it clear that schools can get back to doing hands-on activities in the classroom, such as practical work in science, as long as they follow the guidelines. Check out the rest of the document, on the link above, for more detailed guidance. There are a few changes to how practical work has to be managed in the classroom, but nothing that stops us doing the vast majority of practical work that features in our existing curriculum maps.

### **APPENDIX 3 -Remote education**

If school is affected by a local lock down and some pupils are still in school and others at home, the expectation now is that provision should be in place so that both groups continue to be taught the National Curriculum. There are a number of resources that are freely available that support this.

- [Practical activities for children in locally locked down areas](#) - a CLEAPSS document that gives details of activities linked to the National Curriculum for this situation
- [ASE Coronavirus Hub: Primary Remote Learning Resources](#) - curriculum-led resources (two topics for each year-group) designed to help deliver a structured series of topic-based primary science lessons in a home environment
- [Explorify at home](#) - a weekly supply of 'easy to do at home' activities for pupils, based on the primary science curriculum
- [STEM Learning's Remote lessons for young people](#) - a range of free remotely-delivered lessons
- [CREST Award activities](#) - a document that links CREST Award activities to the most relevant National Curriculum topics and highlights the ones best suited to being done at home
- [Oak National Academy](#) - videos of science lessons for which we have produced a [document](#) that maps the relevant Oak National Academy lessons to each of the National Curriculum statements, where possible.

### **Appendix 4- Safety Guidelines.**

- a. Liquids or small objects (eg peas or marbles) spilt or dropped on the floor may cause falls.
- b. Objects placed in unaccustomed places during experiments may cause falls or breakage of equipment.
- c. Children should not run about when carrying equipment.
- d. Glass should only be used if no alternative and children must be very closely supervised.
- e. Care should be taken when holding objects near to the eye.
- f. Germs are quickly and easily transferred. Hands should be washed before touching food or things to be put in the mouth (e.g. thermometer). Some things may need to be disinfected.
- g. Children should not carry heavy loads (e.g. buckets full of water).
- h. Some animals cause allergies (care should be taken).
- i. Tasting of things should only take place following a letter home to parents for allergy advice and must be closely supervised.
- j. Children should know that some plants are poisonous and should be aware of what these are.
- k. Climbing trees should be discouraged.
- l. Extreme physical exertion may not be wise for some children.
- m. Plastic bags can cause suffocation and are potential hazards.
- n. Use of cutting devices knives, scissors, chisels etc. Can be dangerous. Children should be shown correct techniques for their use and should be supervised at all times.
- o. Throwing projectiles or dropping things needs to be done at carefully chosen places.
- p. Even with household chemicals (e.g. alka Seltzer tablets, vinegar etc) care is needed. Pressure can cause chemicals to shoot out. Safety goggles may be considered.
- q. With naked flames (e.g. lighted candles) children should be warned to keep long hair, ties and bits of loose clothing away from the flame. Candles should be fixed in stable holders. Infant teachers should not use naked flames in the classroom.
- r. No one should look directly at the sun even through dark plastic or glass.
- s. Hot water should not be put into thick glass containers since they may crack due to uneven expansion setting up strains in the glass.
- t. CHILDREN SHOULD NOT EXPERIMENT WITH BOILING WATER.**  
Such experiments must be teacher demonstration only.
- u. Thermometers should be used carefully the bowl being very thin. Mercury thermometers should not be used.
- v. Liquids which produce inflammable vapours (e.g. methylated spirits) should not be used by the children.
- w. Some glue can be hazardous both from the inflamability and inhaling point of view. **GLUE GUNS SHOULD NOT BE USED BY CHILDREN.**
- x. Pupils should use only low voltage supplies (e.g. torch batteries). Rechargeable batteries must not be used in circuit work. Mains electricity should not be used for electricity and magnet



experiments. Where a piece of apparatus powered by mains (e.g. computer) is used then it should be connected under supervision. Avoid leaving apparatus connected and switched on unnecessarily.

- y. Lenses can focus light and heat. Children should not look at intense sources of these through lenses or any devices with lenses.
- z. Magnets can affect other equipment (e.g. watches and computers)
- aa. Even low voltages can cause lengths of thin wire to become hot even to glow and ignite things.
- bb. If possible, avoid keeping animals in school, but if necessary take the following precautions:- animals must be disease free and check that because of dirty food or unsatisfactory cleaning they do not become carriers and transmitters of parasites.
- cc. The care of animals during holiday times should be considered carefully.
- dd. Animals should not be allowed to come into contact with wild animals. Special precautions must be taken when the school has mice.
- ee. Animals can bite and scratch and resulting wounds must be carefully treated.
- ff. People with cuts or infections should not come into contact with animals.
- gg. Wild animals dead or alive should not be brought into school.
- hh. Food for animals should be safely and carefully stored so that it does not become infested.
- ii. Moulds which have been grown should be in sealed containers. These must not be opened to prevent spore dispersal, and then carefully disposed of.
- jj. Extreme care should be taken when using ice

### **Appendix 5 - Classroom organisation considerations**

When organising the classroom it may be useful to consider the following points:-

- a. There is no “right” way.
- b. The amount of equipment and access to it.
- c. The time needed to complete a task.
- d. Hands on experience.
- e. Allowance for individual abilities.
- f. Opportunities for communicating.
- g. Can the children work at their own pace?
- h. The opportunities for recording and assessment.
- i. Opportunities to report back.
- j. Motivation.
- k. Group co-operation.
- l. Clear displays of scientific vocabulary.

## **Appendix 6** **CENTRALLY HELD RESOURCES FOR SCIENCE**

### **Experimental and Investigative Science**

(See also Maths Resources)

Microscope  
Assorted magnifiers kit (class set)  
Magnispectors/ midispectors/ minispectors/ nature viewers  
Classroom thermometers kit  
Thermometers (wall, stirring, immersion, descriptive, numeric LCD, forehead LCD)  
Soil thermometer  
Classroom temperature kit  
Droppers with teat  
Petri dishes with lids  
Test tubes with lids and holding racks  
Compasses  
Plastic bags  
Plastic tanks and plastic tubing  
Stopwatches, egg timer (see Maths resources as well)  
Measuring jugs and funnels                      Stand and clamp  
Bowl scales  
Spring Balances 250g, 1000g, 2000g, 5000g  
Tape measures  
Plasticine/ blu-tack  
Paper (blotting, filter, universal indicator)  
String  
Yoghurt pots/ jam jars/ containers/ metal dishes/ washing up bottles  
Polystyrene spheres  
Night lights and stands  
Mortar and pestle  
Feely bag

**Safety** - Disposable gloves, safety spectacles, **Be Safe Book**

**Also Linked with Design Technology:** Lollysticks, matchsticks, balsa wood, dowel, card circles, tools, masking tape, Lego technic.

### **Electricity and Magnetism**

TTS Electricity Box with notes  
Bulbs 1.5, 2.5, 3.5, flashing.  
Simple and batten bulb holders  
Battery snaps  
Crocodile clips with leads  
Batteries and holders (AA and C)  
Assorted wire pack  
Wire stripper/ cutter  
Screwdrivers  
Buzzers  
Motors and small push-on pulleys, motor clips  
Switches – switch pack, toggle switches  
Make your own switches pack – corks, drawing pins paper clips, paper  
Fasteners, lollysticks.  
Analogue ammeters 0-1A, 0-2A.  
Analogue Voltmeter 0-6V  
Heron Magnet class pack  
Ceramic magnets – bar and horseshoe  
Magnets – giant horseshoe, chrome horseshoe, bar ring  
Metal rimmed counters, magnetic wand set, magnetic marbles  
Iron filings and iron filings bubble  
Assorted metal discs  
Sample box of materials to test for magnetic properties  
Lodestone (magnetite)

### **Materials and their Properties**

Separating Pack – Filter paper, funnels, containers, tubing, and droppers.  
Materials Box – wood, metal, plastic, plaster, sponge, foil and everyday materials.  
Rock board  
Minerals board  
Rock set (quartz, limestone, flint, slate, sandstone, granite, galena, chalk, basalt,  
Marble, iron pyrites, mudstone)  
Fossil set  
Soil samples and soil investigation kit  
Course and fine sieve packs  
Household chemicals (baking powder, bicarbonate of soda, bath salts, lemon juice,  
Vinegar, sugar, salt.)

### **Forces**

Forces and Energy - open backed truck with different sized wheels,  
Cotton reels, elastic bands, containers, assorted  
springs, expendable springs, weight set, ball set  
(foam, tennis, cricket, polystyrene, ball bearings),  
magnets, pulley packs.

Balloons and pump  
Wooden pegs and pipe cleaners  
Syringes  
TTS Slope  
Multiple surface blocks

### **Light and Colour**

Light and Colour box – Mirrors pack, acetate, chromatography kit, filter paper  
Giant prism, colour  
paddles, assorted cellophane, light box, black ink investigations Kit.

Food colouring  
Candles, night lights and holders, matches  
Kaleidoscope  
Pinhole cameras  
Torches  
Shadow stick  
Optical illusion cards

### **Sound**

Sound Kit – Rubber bands, water pots, G-clamp, guitar strings in nylon and  
Steel, string, tuning forks in A and C, panpipes, beaters, 8 note  
Chime bar, shakers, kazoos.

Sound Box  
Wire Helix Slinky  
Instruments – percussion (tuned/ untuned)

### **Life Processes and Living Things**

Body Science box – model pumping heart, body parts tunic, and beanbags stethoscope, forehead thermometers, stopwatch, tape measures.

Box of resources on the Living Body

Human Anatomy Flip Chart

Dental Care Model

Desktop Skeleton

Half size Human Torso

3D Body Wall Charts

Food and Nutrition Charts

Heart Model and notes

Tooth Model and notes

Our Bodies Photopack

Pulse meter

24 animal slides for microscope

Animal Soundtracks

Root Model

From Seed to Plant Model

Plants Photopack

Seeds Educational Pack

Packs of seeds

### **Space**

Orrery Kit

Orrery Demonstration Kit

Box on the Earth in Space (contains charts and mobile and ideas)

Physical Science Flip Chart

Video – Space/ Planets

Links to other Policies: Maths (data handling skills to be used in science lessons), Literacy (Science weeks in Literacy), DT (eg model making incorporating electrical circuits), Music – Making musical instruments, pitch, PSHE (Health)

### **Review:**

- This policy will be reviewed annually by the Science subject leader and leadership team and shared with the school community.