



Repton School Abu Dhabi: Science Curriculum Policy

Science is a core subject within the National Curriculum. This policy outlines the purpose, nature and management of Science taught at Repton School, Abu Dhabi.

Policy Statement

Science is the exploration of the world around them through investigation, questioning and observation.

Science is the study of the physical world, involving a collection of facts from observations, physical experiments and working scientifically from which children form ideas of their world. Science has a heavy emphasis on investigation involving prediction, observation, testing and evaluation. We believe that it is good practice for children to be encouraged to actively learn, by developing their own investigations based on ideas given by the teacher and their own ideas. These ideas will be increasingly founded in scientific knowledge and understanding.

Aims

We aim:

- to develop the natural curiosity of children about the world around them;
- to develop questioning and enquiring minds through a range of enjoyable and interesting experiences;
- to help children develop the skills to make systematic enquiries;
- to provide opportunities for children to apply theoretical ideas to the solving of practical problems;
- to enable children to develop an increasing attention to accuracy;
- to foster a positive attitude to science and increase pupils' understanding of how science is used in the wider world;
- to provide a range of relevant experiences allowing pupils to acquire knowledge, skills and understanding in through the specific disciplines of biology, chemistry and physics, through a variety of teaching and learning strategies;
- to develop the accurate use of scientific vocabulary;
- to meet the needs of each child so that they will reach their full potential.
- to create a sense of awe and wonder with Science

Teaching and Learning

We use a variety of teaching and learning styles in science lessons. Our principal aim is to help develop children's knowledge, skills and understanding.

- Sometimes we do this through whole class teaching, while at other times we engage the children in an enquiry based research activity (termly STEM projects included too)
- We encourage the children to ask, as well as answer, scientific questions.

- Children have the opportunity to use a variety of data, such as statistics, graphs, pictures and photographs.
- Children use Computing in science lessons where it enhances their learning.
- Children take part in discussions and present reports to the rest of the class.
- They engage in a wide variety of problem solving activities.
- Wherever possible we involve the pupils in 'real' scientific activities.
- KS children will use the Science Room on a rota system, to enhance their learning further.
- FS children will visit the Science Room on a termly basis to support their learning further.
- All children will visit the STEM Garden and ICE Room two times each within a term to enhance all skills related to science but also related to the SCF (please refer to SCF document).
- All children will participate in a termly STEM Project where they have to use their scientific skills as well as other skills, to work collaboratively to complete the project successfully.
- Fun and practical visits to the Eco Garden will be planned accordingly to further enhance learning.

Pupils will be encouraged to develop the skills of:

- Exploring and observing at first hand using all their senses
- Communicating scientific ideas orally, in writing and diagrammatically
- Raising questions
- Collecting data
- Planning investigations
- Interpreting scientific data
- Predicting
- Fair testing
- Formulating hypotheses
- Explaining scientific knowledge
- Problem solving
- Explaining and using scientific terminology
- Evaluating
- Sorting and ordering
- Estimating
- Drawing conclusions
- Accurate measuring
- And any other skills related to working scientifically and the specific disciplines of biology, chemistry and physics.

The Approach to Investigations

Each child will plan, take part in and report on an investigation at least once every half term, during each unit of work. The format for these investigations will be progressively systematic. By the end of Key Stage 2, children should be more independent in planning and carrying out these investigations, dependent on ability.

Leadership and Management Roles

The co-ordinators in Rose and Fry Campus are responsible for:

- understanding the requirements of the subject order
- preparing policy documents, curriculum plans, Schemes of Work for the subject (Rising Stars for KS 1&2 children)
- encouraging staff to provide effective learning opportunities for all pupils
- helping colleagues to develop their subject expertise
- collecting and auditing resources
- ensuring common standards and formats for recording and assessment
- liaising with Heads of Year and Heads of Departments on a regular basis
- communicating all developments in the subject, eg. through staff meetings, distributing information via emails and science team members
- organising and monitoring professional development in the subject
- producing annual development plans including costings and priorities which can help inform the school development plan
- liaising with relevant organisations regarding the subject, eg. Other science coordinators in EKI schools, inspectors, Rising Stars, libraries.
- organising and advising on the contribution of a particular subject to other curriculum areas including cross-curricular and extra-curricular ones

Staffing

The class teacher/year member planning science is responsible for timetabling to ensure that the relevant sections of the Scheme of Work are covered during each half term. Teachers will use a balance of:

- teacher-prepared materials
- published resources
- practical tasks
- visitors, e.g., parents, experts, etc
- educational visits
- occasional termly project tasks.

The classroom teacher is also responsible for monitoring the progress of the children in their class and reporting this on an termly basis.

Entitlement

The school’s provision for science education is in line with the standing order for Science Education within the National Curriculum and within ADEC (Abu Dhabi Education Council).

The curriculum is delivered based around the new Curriculum 2014. The following specific programmes of study must be taught during Key Stages 1 or 2.

Year Group	Biology	Chemistry	Physics
1	Plants and Living Things	Everyday Materials	Seasonal Change,
2	Plants and Living Things Living things and their habitats,	Uses of everyday materials,	N/A
3	Plants, and Living Things	Rocks	Forces and magnets Light
4	Living things and their habitats	States of matter	Sound Electricity
5 (2017/18 onwards)	Living things and their habitats	Properties and changes of materials	Earth and space Forces
6 (2017/18 onwards)	Living things and their habitats	N/A	Light Electricity

Working scientifically – all skills developed throughout all programmes of study

NB: Teachers need to ensure that all Repton short term plans are culturally sensitive to life in the UAE.

In Repton School, it is expected that Science taught for two hours per week in KS 1&2 and 1 hour in FS (FS whole class input, with investigation activities for children to explore during child initiated time).

Planning

Foundation Stage

We teach science in the FS classes as an integral part of their topic work covered during the year. We relate the scientific aspect of the children’s work to the objectives set out in the Early Learning Goals, included in ‘the World’ aspect of the Understanding the World area of learning. At Repton, the FS children use the Discovery Dog format as a plan to base their lessons on and to encourage the children to think scientifically by answering the relevant questions on the format.

Key Stage

Planning in Years 1 to 6 is based around the Rising Stars scheme of work, inline with the September 2014 changes to the science curriculum. Long and medium term planning is based on the Rising Stars science document, which is supplemented by extra material when appropriate and inline with ADEC guidance. Science is taught as a standalone lesson within KS and sometimes takes place in the Science Room



depending on the rota designed by the Science coordinator. Short term planning is used flexibly to reflect the objective of the lesson, the success criteria and notes of the next lesson. Science is taught in half termly blocks based on the Rising Stars scheme of work. There will be a degree of flexibility with the structure of the lesson to respond to the needs of the children and the class profile. However, it may consist of an introductory whole class session, differentiated activities and a plenary to draw conclusions.

Assessment and Recording

Assessment is in line with the school's Assessment Policy. Assessment opportunities are included in the study of each unit of work (KS - Rising Stars unit tests and FS teacher judgement inline with the EYFS Development Matters document). Assessments are based on the National Curriculum level descriptors.

Teachers will assess children's work in Science from three aspects (short-term, medium-term and long-term). There will be a strong focus on Assessment for Learning (AFL) and children will be encouraged to assess their own work where appropriate.

Formative Assessment (short-term)

Assessment is carried out informally during the course of teaching. It enables the teacher to identify a child's understanding and progress in particular aspects, to inform their immediate teaching and to plan for their coming lessons. This can take the form of:

- small group discussions in the context of a practical task
- specific assignments for individual children
- individual discussions with children to evaluate progress and to set new targets.

At the beginning of a unit of work, individuals complete concept maps (currently in FS and to start in KS term 3), which summarises their knowledge and understanding. These concept maps are revisited at the end of the unit and new knowledge and understanding are added.

Medium-term assessment

This is planned into the work as discrete assessment opportunities every half term at the end of each unit (Rising Stars in KS) and FS EY outcomes at the end of each term. The assessment often takes the form of a short test or task and serves to show the teacher the extent to which learning objectives have been met.

This is used to inform planning future lessons and activities.

Summative assessment (long-term)

KS children will complete an end of year test of all programmes studied in a specific year group. This will produce a score will inform which level a child is. It will also highlight Gifted and Talented children and SEN children for Repton's School Register. Parents are informed of the pupil's progress during parents meetings and in reports.

Assessment for Learning (AFL)

Assessment for learning involves using assessment in the classroom to raise pupils' science achievement. It is based on the idea that pupils will improve most if they understand the aim of their learning, where they are in relation to this aim and how they can achieve the aim. Please see the Assessment Policy for further details. At the end of each unit, the KS children will complete an Assessment ladder where they will assess their own learning as well as a peer and a teacher (refer to Assessment policy for more details).

Continuity, progression and standards

Progression is promoted throughout the school by use of the science scheme of work, which is located in on the shared drive and on the Rising Stars website. Please see the Curriculum Policy for further details on this and also inclusion & special needs.

Cross-Curricular Links

As far as possible, the Science curriculum will provide opportunities to establish links with other curriculum areas:

- **UAE links;**

At Repton school, we educate our children on the rich Arab scientific history by making links wherever possible in all subjects. We also encourage the children to understand the UAE's natural resources and find possible solutions to it's problems. We also discuss the importance of preserving the UAE's natural beauty.

- **English;**

In particular, at FS and Key Stage 1, the pupils are encouraged to use their speaking and listening skills to describe what they see and explain what they are going to do next. At key stage 2 the pupils are encouraged to develop their skills of writing to record their planning, what they observe and what they found out. The children develop their written skills by writing reports in science. Science based texts are sometimes used in English lessons and in guided reading sessions.

- **Mathematics;**

At all Key Stages the pupils are expected to use their knowledge and understanding of measurement and data handling at appropriate levels. In science, they should be applying their maths skills at levels similar to those, which they are using in their maths work. Mathematical skills such as weighing and measuring are an important part of a Science lesson. Where appropriate, children record their findings using charts, tables and graphs. (links to STEM projects and STEM activities in the STEM Garden.

- **Personal, social and health education**

Health education is taught as part of the units on ourselves, health and growing, teeth and eating, moving and growing, keeping healthy and life cycles. It is also linked to becoming a global citizen (please refer to SCF document).

- **Sustainability**

Sustainability forms an integral and vital part of the science curriculum. Within the scheme of work, individual units naturally lend themselves to developing children's knowledge, understanding, concern and care for the environment.

There are many resources within our school grounds, which allow effective teaching of environmental science, including our STEM Garden, ICE Room (Invent, Create, Explore), outside balconies and ECO Garden. Children are encouraged to use these areas throughout the school year.

As a result of teaching about the environment, every encouragement is given to the children to apply the principles of energy efficiency, water conservation, waste reduction and recycling and litter control. Recycling is actively encouraged throughout the school. Additionally, there are many opportunities within science and other areas for children to learn about the choices they have and the impact that they can make on their environment.

Equipment and Resources

The science coordinators carry out an annual audit of the resources and reorders any consumables for each campus when necessary. New resources can be purchased through negotiation between class teacher, science co-ordinators, SLT and EKI procurement team, within the amount allocated in the annual budget.

Health and Safety

The school's Health & Safety Policy outlines the safe codes of practice for our school and provides the necessary guidance on the response and the reporting of all incidents. Children are encouraged to assess hazards and discuss the appropriate precautions. Children are taught the appropriate safe practice when using equipment. This will include:

- how to use equipment correctly and in accordance with health and safety guidelines
- to behave in a considerate and responsible manner, showing respect for other people and the environment whilst on trips outside the classroom.

A Risk Assessment will be completed for any educational visit and any class activities that may need a risk assessment e.g. Year 1's Rising Stars topic of Celebrations where the teacher needs to light a candle to discuss what happens to the wax.

Computing

Children use Computing in Science lessons where appropriate. The children have access to the internet to research information about their Science topics, with stick teacher support and guidance. They have access to different apps, which enables them to present results and findings in a variety of ways. Each classroom is fitted with an interactive whiteboard enabling the teacher to use video clips and demonstration

programmes to enrich lessons. On the Rising Stars website, there are lots of interactive activities to be used. All children in Repton School have a 1-1 iPad.

At Key Stages 1&2 the pupils will use Computing to:

- Locate and research information (internet)
- Record findings (using text, data and tables)
- Gain confidence in using calculators, VCR and tape recorder as well as the iPads.
- Use age related science apps
- Use age related apps to enhance and support learning further

At FS the pupils will use Computing to:

- Use age appropriate science apps
- Use age related apps to enhance and support learning further
- Take photos or videos of science based activities

e-Safety

When Computing is used in Science lessons, before every lesson the class teacher will remind children about how to use the internet safely and refer to school rules. They will monitor and report e-safety incidents in line with the E-Safety Policy.

Special Needs

All children are encouraged and supported to develop their full potential in Science. Some children may require extra support in the classroom and opportunities for consolidation and reinforcement. Activities are differentiated to meet the needs of all pupils.

Equal Opportunities

All children are entitled to access to the Science curriculum in line with the schools policy for equal opportunities.

Children who show a particular ability and flair for Science, who work more quickly through the levels of the National Curriculum are extended through the use of more challenging problems and investigations.

Amanda Abou Samra
Head of Science (Rose Campus)

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