



RMS Microscope Activity Kit - Curriculum Links

Any practical experience of using a microscope will provide children with opportunities to observe closely, stimulate their curiosity and develop questioning skills as outlined in the 2014 National Curriculum [DfE]:

*“The principal focus of science teaching in **key stage 1** is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them. They should be encouraged to be curious and ask questions about what they notice. Most of the learning about science should be done through the use of first-hand practical experiences...”*

*“The principal focus of science teaching in **lower key stage 2** is to enable pupils to broaden their scientific view of the world around them..... They should ask their own questions about what they observe They should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out.”*

*The principal focus of science teaching in **upper key stage 2** is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically.*

Feedback from teachers who have used the microscopes with their classes indicates that all children can benefit from hands-on experiences using microscopes:

“Looking through the microscopes in that much detail has made it more exciting for them. It has got them more engaged in it and children who probably would have been slightly indifferent about going on a mini beast hunt have been quite excited by it and really enjoyed going to look for things because they know they will be looking at them under the microscope.” Karen Butterworth, Y2 teacher

“There was not a single pupil who was not rapt by it.” Sian Davies, Y6 teacher



Links to Key Stage 1 National Curriculum (Years 1 and 2)

Using the RMS Microscope Activity Kit and following the RMS suggested activities will help children develop their 'working scientifically' skills as described in the KSI national curriculum:

Working scientifically	Activity 1	Activity 2	Activity 3	Activity 4	Activity 5	Activity 6
▪ asking simple questions and recognising that they can be answered in different ways	√	√	√	√	√	√
▪ observing closely, using simple equipment	√	√	√	√	√	√
▪ performing simple tests	√	√	√	√	√	√
▪ identifying and classifying				√	√	√
▪ using their observations and ideas to suggest answers to questions	√	√	√	√	√	√
▪ gathering and recording data to help in answering questions		√	√	√	√	√



Using the RMS Microscope Activity Kit can also support the development of scientific knowledge and conceptual understanding in the following topics in KSI:

KSI curriculum requirement		Practical activity
Y1 Plants	<ul style="list-style-type: none"> identify and describe the basic structure of a variety of common flowering plants, including trees 	Children could use a microscope to look at a variety of plant parts to compare similarities and differences
Y1 Everyday materials	<ul style="list-style-type: none"> identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock 	Children could use the microscope to look closely at a variety of materials (e.g. papers, fabrics)
Y1 Seasons	<ul style="list-style-type: none"> observe changes across the four seasons 	Children could look at leaves at different times of the year
Y2 Living things and their habitats	<ul style="list-style-type: none"> identify and name a variety of plants and animals in their habitats, including micro-habitats 	Children could look at mini beasts and plants from different habitats
Y2 Animals, including humans	<ul style="list-style-type: none"> find out about basic needs of animals, including humans, for survival (food) 	Read 'Oliver's Vegetables' and compare cooked & uncooked foods using microscopes
Y2 Uses of everyday materials	<ul style="list-style-type: none"> identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic....etc. 	Children could use the microscope to look closely at a variety of materials (e.g. papers, fabrics) to compare similarities and differences and use their observations to suggest why materials are suited to particular uses



Links to Lower Key Stage 2 National Curriculum (Years 3 and 4)

Using the RMS Microscope Activity Kit and following the suggested activities will help children develop their 'working scientifically' skills as described in the lower KS2 national curriculum:

Working scientifically	Activity 1	Activity 2	Activity 3	Activity 4	Activity 5	Activity 6
▪ asking relevant questions and using different types of scientific enquiries to answer them	√	√	√	√	√	√
▪ setting up simple practical enquiries, comparative and fair tests	√	√	√	√	√	√
▪ making systematic and careful observations and, where appropriate, taking accurate measurements using standard units	√	√	√	√	√	√
▪ gathering, recording, classifying and presenting data in a variety of ways to help in answering questions	√	√	√	√	√	√
▪ recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables		√	√	√	√	√
▪ reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	√	√	√	√	√	√
▪ using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	√	√	√	√	√	√
▪ identifying differences, similarities or changes related to simple scientific ideas and processes	√	√	√	√	√	√
▪ using straightforward scientific evidence to answer questions or to support their findings.	√	√	√	√	√	√

Using the RMS Microscope Activity Kit can also support the development of scientific knowledge and conceptual understanding in the following topics in lower KS2:

Lower KS2 curriculum requirement		Practical activity
Y3 Plants	<ul style="list-style-type: none"> • identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers • explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal 	Children could use a microscope to look at a variety of plant parts and seeds to compare similarities and differences
Y3 Animals, including humans	<ul style="list-style-type: none"> • identify that humans and some other animals have skeletons and muscles for support, protection and movement. 	Children could use the microscope to look closely at a variety of insects and consider why they do not have an endoskeleton
Y3 Rocks	<ul style="list-style-type: none"> • compare and group together different kinds of rocks on the basis of their appearance and simple physical properties 	Children could look closely at rock samples, sand and soil samples
Y4 Living things and their habitats	<ul style="list-style-type: none"> • explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment 	Children could look closely at flowering plants such as grasses and compare with non-flowering plants such as ferns and mosses (looking at spores)
Y4 States of matter	<ul style="list-style-type: none"> • compare and group materials together, according to whether they are solids, liquids or gases 	Children could look at sand, flour, salt, sugar and consider which of these are crystals



Links to Upper Key Stage 2 National Curriculum (Years 5 and 6)

Using the RMS Microscope Activity Kit and following the suggested activities will help children develop their 'working scientifically' skills as described in the upper KS2 national curriculum:

Working scientifically	Activity 1	Activity 2	Activity 3	Activity 4	Activity 5	Activity 6
▪ planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary		√			√	√
▪ taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate		√			√	√
▪ recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs		√	√	√	√	√
▪ using test results to make predictions to set up further comparative and fair tests	√	√	√	√	√	√
▪ reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations	√	√	√	√	√	√
▪ identifying scientific evidence that has been used to support or refute ideas or arguments.	√	√	√	√	√	√

Using the RMS Microscope Activity Kit can also support the development of scientific knowledge and conceptual understanding in the following topics in upper KS2:

Upper KS2 curriculum requirement		Practical activity
Y5 Living things and their habitats	<ul style="list-style-type: none"> describe the life process of reproduction in some plants and animals 	Children could look closely at anthers, stigmas, and seeds from flowering plants and compare with spores from ferns and mosses
Y5 Properties and changes in materials	<ul style="list-style-type: none"> compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution 	Children can look closely at crystals, powders and solutions of these
Y6 Living things and their habitats	<ul style="list-style-type: none"> describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro- organisms, plants and animals 	<p>Children can compare characteristics of smaller animals such as insects, spiders, worms</p> <p>Take rubbings from around school (e.g. door handles, £5 note) and grow the microbes on agar. View results using microscopes</p>



Cross-curricular links

Maths

Using and applying: the RMS Microscope Activity Kit - Activity 2 asks children to work out the magnification of the microscopes.

English

Teachers who have used the RMS Microscope Activity Kit have suggested the following activities:

- Children could select objects from the local outdoor environment and view using microscopes. They could use their close-up observations of insects, plants and manmade objects to inspire creative writing about another fantasy world.
- Microscopes could be used to introduce a literacy topic based around 'Alice Through the Looking Glass'. The children can view insects in much more detail and will gain experience about scale and relative sizes of objects.



With thanks to Alison Trew of the Primary School Teaching Trust for producing these guidelines

September 2016