The system in KS1

The KS1 system runs over a two year cycle and is designed to meet the requirements of the National Curriculum and move children beyond. A focus is placed upon the three disciplines of science, with biology making up one half of the cycle, but also introducing children to chemistry and physics.

As in the National Curriculum, the Empiribox system places an emphasis on developing children's investigative skills alongside the acquisition of scientific knowledge. Children will be taught to ask and answer questions, to devise and carry out investigations, to gather information and to decide whether their data is useful. A wide range of engaging activities ensure children progress through the system becoming independent learners with a keen interest in science and the world around them.

Term	*Empiribox Suite*
Term 1	Identifying and Classifying Changing Materials
Term 2	Observing Our Living Earth
Term 3	Creating and Using Data Habitats and Seasonal Change
Term 4	Identifying and Classifying Mixtures and Potions: An Introduction to Chemistry
Term 5	Observing Plants and Trees
Term 6	Creating and Using Data Toys: An Introduction to Physics

Empiribox KS1 in the classroom

Investigative skills focus

During the first year, one suite will focus upon either developing children's ability to identify and classify, their observational skills or the collection and analysis of data. These will be repeated during the second year in order to provide opportunities for progression and embedding.

Each suite also contains a number of general activities which will provide further opportunities for teachers to ensure children are able to master these key skills. We believe in ensuring the children have opportunities to experience a wide variety of activities.

All information will also be available on the teacher's page of our website: www.empiribox.org

Investigative Skills	*Lesson Focus*
Identifying and Classifying	• Naming materials. • Sorting and grouping skills. • Use simple features to compare objects, materials and living things. • Decide how to sort and group them. • Notice patterns and relationships. • Developing vocabulary. • Identify connections between objects. • Perform simple tests. • Use a variety of scientific equipment.
Observing	• Observe changes over time. • Notice patterns and relationships. • Recognise ways in which they might answer scientific questions. • Develop vocabulary. • Identify questions that can be tested.
Creating and Using Data	• Use simple measurements and equipment to gather data. • Carry out simple tests. • Use a variety of scientific equipment. • Record simple data in a variety of ways. • Talk about what they have found out and how they found it out. • Record and communicate their findings in a range of ways. • Use simple scientific language.

Empiribox KS1 - Overview

Training

Upon subscription, school staff will receive half a day's training. This will cover how the system works at KS1, any necessary Risk Assessments, and all other necessary documentation. As well as having the opportunity to have a little "hands-on" fun.

Experienced primary school teachers will be on hand for further support whenever required, please call Kim on 0797 377 5383 or email kimhaynes@empiribox.org

Lessons

Each suite comprises of a set of lesson plans covering 12 weeks. Whilst we realise that each classroom is organised in a particular way, the lesson plans are quite flexible. They are written in a format which would suit a set science lesson, for example an afternoon session in which you may wish to teach the lessons as a whole class, demonstrating on a step by step basis. However, we understand that many classrooms do not work this way, so all activities can be taught independently, which suit schools that teach science as part of a free flow or carousel lesson.

The length of each lesson depends upon the approach you decide upon.

Each lesson plan comprises the following:

- A suggested text/song/rhyme to begin the lesson. (Occasionally alternative texts may be included if a particular text is no longer available)
- A teacher led activity which can be delivered by an adult to a small group.
- An investigation activity which could be carried out by small groups of children.
- In addition, each suite offers a range of general activities which can be used independently by children. The teacher can select one from the trolley which they believe will support the learning in the classroom. Alternatively these can be used as opening activities or fillers for when you may have a spare five minutes!

  The investigations are largely designed for children to work in small groups. The amount of equipment provided is dependent on this.

Lesson Plans

Each suite comprises of 12 lessons. We suggest that these can be taught in almost any order. The focus is on learning by experience, and recording can be achieved in a variety of ways you currently use, for example, diagrams, photographs and videos, in addition to written notes where appropriate.

Empiribox KS1 - Overview

Lesson plans contain:

- ✓ Differentiated outcomes at 3 levels.
- ✓ Links to websites for further explanations and ideas.
- ✓ Maths and literacy ideas.
- ✓ **Explanations for teaching staff of the science behind the investigations. Each lesson plan has a "science explained" paragraph to support adults, you may then choose to disseminate parts of this to your pupils. It is not meant as a direct learning outcome, nor to be taught directly to the children. Rather, as a support to non-science specialists.**

Using the Frozen lesson as an example;

Lesson Type	***Suggested Format***	
Carousel	Teacher Led Activity	Teacher may work with a group of 10 children, teaching the science concepts of freezing/snow etc. Children will work as a small group to investigate the Magic Snow. Children will examine the snow before and after water is added, allowing time for discussion and observations. New vocabulary can be introduced. Children may record observations/vocabulary as required.
	Independent Activity	An adult may need to explain the activity or simple instructions left. Children work in small groups to Save Old Sam. They each have an ice cube and a material. They can decide which material will save Sam. Again, recording their observations and findings as required.
	General Activity	The remaining groups will select one of the 4 General Activities to do. They may choose from: Using the Sorting Circles Challenge Cards (3 levels) Labelling Cards Feely Bag
Whole Class	If teaching as a whole class: Week 1: teach the science concepts and working through the preamble. Week 2: focus on the Investigation. The General Resources may then be used as either a starter activity or for a plenary.	

Empiribox KS1 - Overview

Differentiated learning outcomes are suggested in every lesson plan. Some simple suggestions are made here.

1) Using the Frozen lesson as an example:

Pupils	***Differentiation***
Younger/Less Able children	<u>Magic Snow</u>: ✓ Describe what they have seen and felt using a range of vocabulary. ✓ Compare Magic Snow with their experience of real snow. ✓ Make observations such as "it has got bigger" or "the water has gone". ✓ Make suggestions as to why a change has taken place. ✓ Describe the properties of the Magic Snow. ✓ Carry out the investigation without measurements. <u>Save Our Sam</u>: ✓ Order the materials used to protect Sam from "best" to "worst". ✓ Describe what happens to Sam over a period of time. ✓ Describe what happens to the materials used. ✓ Identify what caused the ice to change and link to real life examples.
Older/More Able children	<u>Magic Snow</u>: ✓ Standard measurements may be made with more able children, either the amount of water used or the weight of the snow before and after. ✓ Descriptions of what happened will include an explanation as to why it may have happened. "I think the water has disappeared because it was soaked up by the snow". ✓ Observations will be more detailed and use a wider range of vocabulary. ✓ Make links between the Snow and other materials. <u>Save Our Sam</u>: ✓ Record time taken for the ice cube to melt using a stopwatch. ✓ Order the materials with an explanation as to why they have made that choice. ✓ Support their predictions with explanations. "I think the cotton wool will protect Sam because it is thick and soft like my coat". ✓ Select a range of "good" or "bad" materials before beginning the investigation. ✓ Use new terms such as insulator.

2) General resources:

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Pupils	***Differentiation***
Younger/Less Able children	Sorting Circles: Using materials from around the room separate the two sorting circles and classify objects as hard/soft, rough/smooth etc. Feely Bag: Working with a partner, one child may describe one thing inside the bag for another to guess. Challenge Cards: Level 1, finding objects and materials using a single description or classification. Labelling cards: Take a card to an object made from that material and draw a picture of another object made from the same material.
Older/More Able children	Sorting Circles: Using materials from around the classroom, overlapping the sorting circles to make 3 groups to classify objects. For example flexible, rigid, stretchy. Alternatively children could use two groups but the categories may be more difficult to sort, for example manmade and natural. Feely Bag: Select two objects to describe which may be linked, the partner has to guess the link. Challenge Cards: Level 3, finding materials from descriptions using a wider range of vocabulary or with two properties. Labelling Cards: Completing all parts of the card.

"Don't worry, it's just a phase."

Empiribox
Nurturing Future Scientists