Science Ideas Webs:
A support tool for embedding science in topic based teaching

What is it?

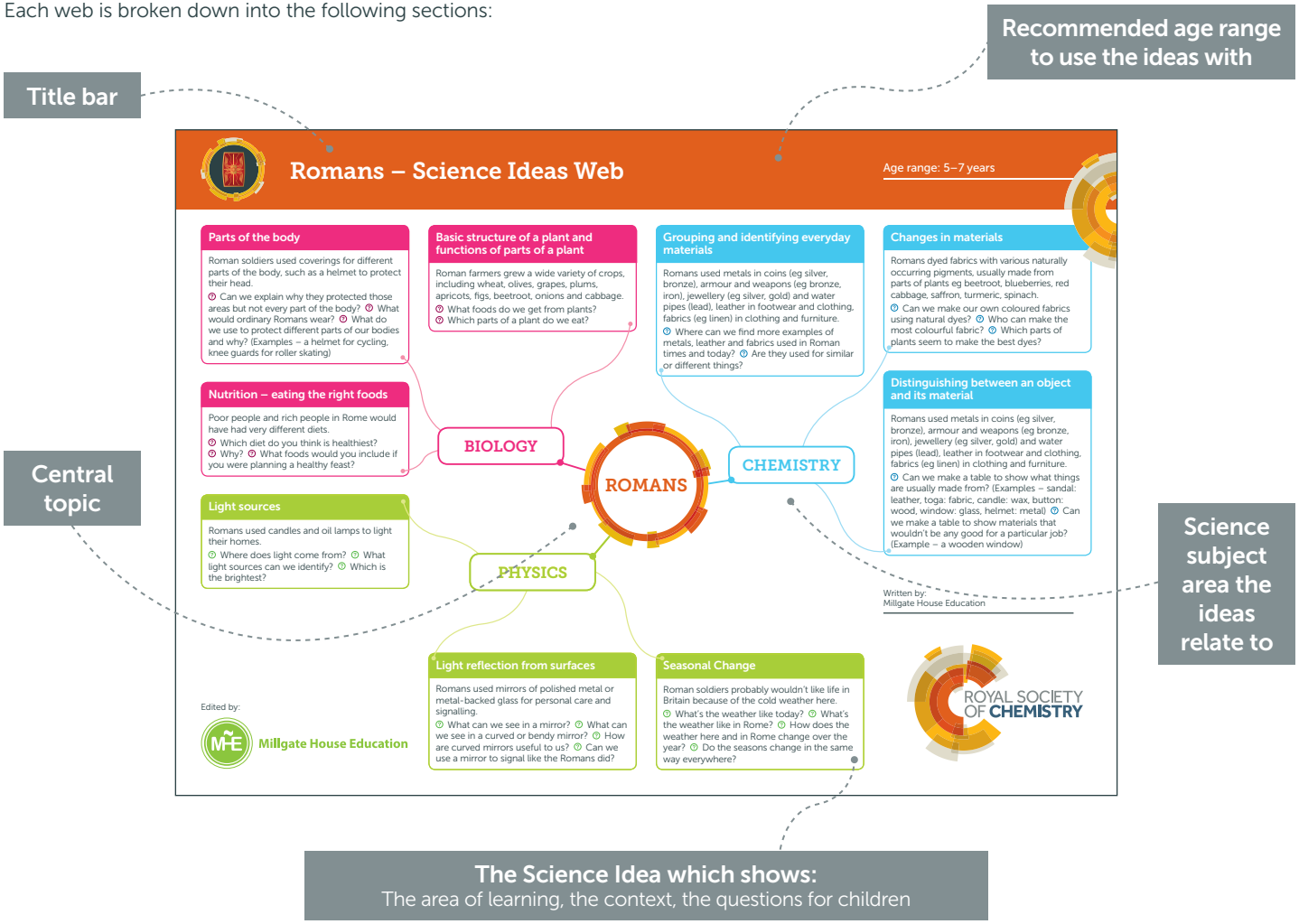
The webs have been designed as a tool to support topic planning and to help you consider how science fits within a topic.

Each topic web is designed to give you a quick overview of how science can be linked with a topic and to suggest specific activities you can do with your class. **It doesn't provide detailed lesson plans.**

Generally, there are three or four 'ideas' for each science subject area (chemistry, physics, biology) in each age range.

What is each section for?

Each web is broken down into the following sections:



How do I use it?

There is no right or wrong way to use the webs. The exact use of the web will depend on how your school approaches topic-based teaching.

We recommend the following ways to use the webs:

1: **To support you in deciding the science to teach through a topic-based approach**
If you come to the science ideas webs with your specific topic in mind, the webs will highlight multiple areas of science, that you could link to. If you're in this situation you have the opportunity and flexibility to choose the most appropriate science to teach in each topic based on a contextual connection.

2: **If you have decided both the science and topic to teach in advance, to support you in linking them**
If you come to the science ideas with your specific topic in mind and an understanding of what science you will be teaching, the webs may highlight a contextual link you can make. For example, if you are teaching the Romans and you have already planned to cover the science of light, there are two links to choose from in the 5–7 web. However, if you can't find an idea that fits your topic and desired area of science, don't force a link.

Whichever way you come to the webs, we recommend using the ideas as a hook or anchor in a topic.

A hook or anchor is where the idea is used to pin the science to the topic in a meaningful way. During the lesson, when children see the connection for the first time, they experience a meaningful context for their science learning. Through building other lessons around the idea, which are possibly discrete science lessons, you can ensure your class progress in their science understanding, enquiry and content knowledge.

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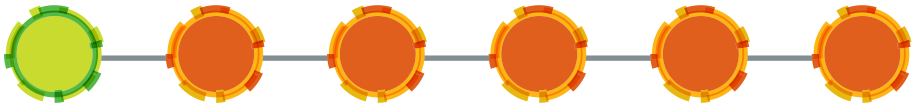
How do I plan lessons around the idea?

There are three main places you may expect to place an idea from the web into a sequence of lessons.

1. At the beginning

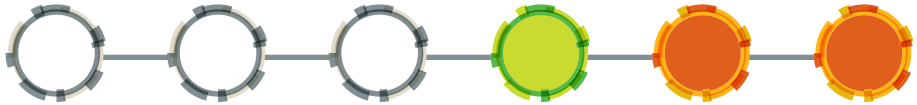
You use the science web idea as the launch idea for a new area of science within your topic – maybe even as part of launching the topic itself. The immediately connection will focus the children's attention on the fact that the science they will do, even if discrete following the initial introduction, is relevant to the topic they will explore that term.



(Green is the lesson using the idea – all other lessons (yellow) are either discrete science lessons planned to allow progression in a unit or lessons with some context)

2. In the middle

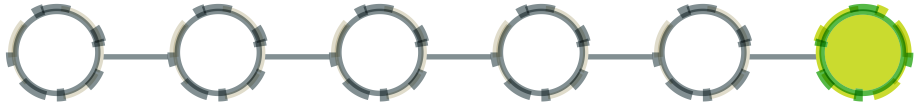
You use the science web idea to highlight how some science that has been done in recent weeks is relevant to the topic. This allows the children to realise the importance/relevance of the science they have been doing and can give them a 'light bulb' moment. Science lessons after the use of the idea can be framed in that context, even if they are discrete.



(Green is the lesson using the idea – all the lessons before are discrete science lessons, and the lessons after (yellow) can be either discrete or planned to allow progression in a unit or lessons with some context)

3. At the end

You use the science web idea to end the teaching of an area of science. This allows you to make a dramatic reveal of why the science they have been doing was relevant to the topic. This method also allows the children to realise the importance/relevance of the science they have been doing and lead to a possible 'light bulb' moment.



(Green is the lesson using the idea – all the lessons before are discrete science lessons)

We also make the following core recommendations:

- **If you don't want to use an idea as a basis for a full lesson then use it for a starter, plenary or homework link.** This works well for links that you think your class would like but fall outside of the science being covered. For example, if you're teaching plants while teaching the Romans, you could make a seasonal change link a starter activity in a topic lesson or in homework. This can also support your assessments of previous science work. E.g you taught seasonal change in a previous change and want to use a contextual application as an assessment opportunity.
- The webs are not designed to give you all the science to teach in a topic. If you just taught the ideas on a web there would be little to no progression of scientific concepts over the term the topic is being taught. So only use one or two ideas to help structure your science content and connect it into your topic in a meaningful manner. **Selecting a small number of activities that are relevant to your current science topic and your topic will help to create useful links across the curriculum.**
- **The webs will not give you all the ideas possible.** It is perfectly valid for you to use the webs as a starting point for your own ideas and then use the structure to support other valid ideas we didn't cover or to help you plan a topic that currently doesn't have a web
- The age ranges shown in the topic web are only an approximate guide to where the science activities fit. **You will need use your judgement on where the activities fit best in your school's curriculum.** There is no reason why you shouldn't use questions from outside the suggested age ranges if they fit into the topic you are teaching and you feel that they are appropriate for your children.
- **The science-based activities have all been written in the form of questions with many involving child led enquiry.** Generally this will involve some kind of practical hands-on enquiry, though in some cases it will involve some kind of research using secondary sources. We have ensured that the questions cover a variety of types of science enquiry, specifically observing over time; looking for patterns; grouping, sorting and classifying; comparative and fair testing; and researching. More details of these science enquiry types can be found in *It's not fair – or is it?* (J Turner, B Keogh, S Naylor, L Lawrence, Millgate House Publishers, 2011). You may also wish to include some pre-planned teacher-led enquiries, but they are not the focus of the webs.

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