Ofsted publishes science research review – the first in a series of subject reviews

News story

Ofsted has today published the first review in a new series looking at what makes for a high-quality education in different subjects across the curriculum.

Today's review focuses on science. It explores a range of research and evidence to identify factors that can influence the quality of science education in schools in England. It also highlights some of the barriers that prevent their implementation.

The review recognises that there is no one way of achieving a high-quality science education. Rather, it considers a number of key principles that can play a central role in shaping the quality of school science.

Her Majesty's Chief Inspector, Amanda Spielman said:

> I'm really pleased to publish our science subject review today. This is the first in a series of subject reviews we will publish over the coming months, which will inform our thinking about what makes a high-quality subject education in schools.
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> The science research review was planned before the COVID-19 pandemic began, but its publication is timely. As part of education recovery, schools will need to think carefully about what content to prioritise and how best to teach it.
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> We hope that the principles identified in this review will be helpful as science subject leaders plan and adapt their curriculums.

In the review, we identified a number of principles that literature suggests can contribute to high-quality science education. These principles include the importance of:

- planning the science curriculum so that pupils build knowledge of key concepts and the relationships between them over many years; this prevents pupils from seeing science as a list of isolated facts
- pupils remembering long-term the content that has been taught; this is because building domain-specific knowledge leads to expertise
- explicitly teaching pupils the concepts and procedures needed to work scientifically
- starting curriculum planning right from the early years by introducing pupils to wide-ranging vocabulary to describe the natural world (these words should not be overly technical)
- teachers giving clear explanations that build on what pupils already know and explicitly focus pupils' attention on the content being learned
- making sure practical work has a clear purpose, forms part of a wider teaching sequence and takes place only when pupils have enough prior knowledge to learn from the activity
- science teachers and technicians having access to regular, high-quality subject-specific continuous professional development (CPD); this is especially important given that many science teachers are teaching outside of their subject specialism

Our next step in this project will be to look at how science is being taught in schools. On inspection, we will use our subject deep-dive methodology to gather rich evidence on the quality of science education. We will publish a report in spring 2022 to share what we have learned with schools, parents and policymakers.

To find out more about Ofsted's curriculum work, read the principles behind the research reviews and subject reports.

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