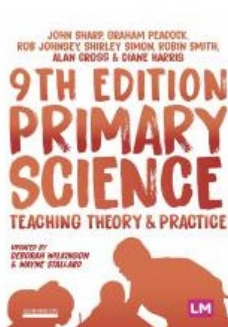
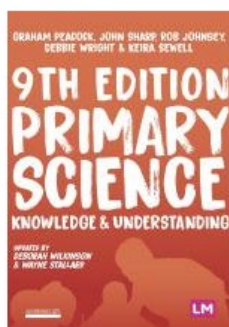


PGCE Science

Subject knowledge development in preparation for teaching

Everyone has concerns about their subject knowledge at some stage of their teaching career. In science, there are three specialist subjects to navigate, and we all worry about teaching outside of our specialism. As part of your preparation for the PGCE course, subject knowledge development will no doubt be a priority but please don't feel too anxious about this. Whilst it will be your responsibility to ensure you have secure subject knowledge for the topics you will be teaching, we will do all that we can to support you with subject knowledge development through the course.

As a starting point, please take a look at this [primary science resource](#) by clicking on the science books on the website.



The purpose of the questions is to help you identify areas of strength and areas that need further development in your knowledge and understanding of science. Try to complete all the questions, and then click on the submit button to get instant feedback. The feedback page includes the answers to these questions as well as links to printed resources that will support and deepen your understanding.

Once you have a clear idea about the subject areas you would like to work on, there are lots of resources available to support you. In this document you will find some suggestions for online materials to help with preparing your subject knowledge for teaching. Please keep a record of everything you have accessed as this will be useful throughout the course and interesting to discuss with your tutor, mentor, and other students at the start of the course.

The Science curriculum and assessment

The first point of reference for science content is the National Curriculum in England: science programmes of study [Science National Curriculum](#)

You will also find more specific details of how the National Curriculum is delivered at key stage 4 (and 5) via the individual exam board specifications such as [AQA](#), [Pearson Edexcel](#) and [OCR](#).

A range of assessment resources, including **past papers to work through**, can be found on exam board websites too, such as AQA [Biology](#), [Chemistry](#), [Physics](#) and [Combined Science](#).

The American Association for the Advancement of Science (AAAS) have a fantastic [bank of resources](#) that we use regularly on the course. You might find it helpful to browse through when developing your own subject knowledge and understanding of assessment.

General subject knowledge development resources



Log onto <https://www.stem.org.uk>

You can register as a new user (it's completely free). Then select resources/science and select topics from the choices on the left hand side of the page. There are materials for primary, key stages 3 and 4 that will help to develop your subject knowledge in specific areas



Also on STEM page you will find links to [Best Evidence Science Teaching](#) (BEST), a collection of free research evidence-informed resources for effective teaching of difficult ideas, embedded formative assessment and adaptive lesson planning.

You could download the 11-14 subject maps for each science and annotate them with your thoughts on how the topics interlink, what you have learned and so on.

There are a lot of resources designed by various institutions to support home schooling and learning during the pandemic. You may find these helpful when looking at developing subject knowledge and how teachers share this content with children in a way that enables them to learn.

As a starting point you could look at [BBC Bitesize](#) and [Oak National Academy](#). Other ways to develop your science subject knowledge and understand how [science capital](#) can influence engagement with school learning are by virtually visiting museums such as the [Science Museum](#) and [The Natural History Museum](#) and science exhibitions and events such as [Magna](#) and [British Science Week](#).

Specialist Subject Associations

We encourage students to join their specialist subject associations. Usually student teacher membership is heavily discounted or even free! Details of some of these can be found below. Once registered on the PGCE course you may wish to join the [Chartered College of Teaching](#), which is free for student teachers.

The Association for Science Education (ASE) holds many local and national events that you may find of interest and the [website](#) has links to a wide range of teaching and subject knowledge development resources, in all three specialism and working scientifically. For beginning teachers, the [first two years of membership is completely free](#) and includes a whole range of benefits that you will find invaluable.

Biology

[Science and plants for schools](#) (SAPS) covers all aspects of teaching and learning in plant biology and has lots of clear and creative resources to develop subject knowledge and to use in the classroom.

[The Royal Society of Biology](#) has a dedicated section for [education](#) with helpful information for teachers and lots of resources to support subject knowledge development.

Chemistry

[The Royal Society of Chemistry](#) has a dedicated [Education](#) website that contains a very wide range of educational resources, ideas and activities, demonstrations, simulations and videos that will all support your subject knowledge for teaching. [Here](#) you will find a set of Chemistry self-

assessment quizzes designed specifically for teachers to offer a starting point or evaluation of subject knowledge up to GCSE level. They are not as scary as they sound, and we would recommend giving them a go as you work on the subject knowledge audit.

Physics

The [Institute of Physics](#) are committed to supporting beginning teachers. The website has a huge section dedicated to Physics education and a [student teacher](#) section specifically to support you. Don't miss the [Marvin and Milo](#) key stage 2 and 3 resources to develop your own understanding of 11-14 Physics or the [IoP Spark](#) resources.

Finally, some other ways of developing subject knowledge are familiarising yourself with a range of secondary science textbooks and working through GCSE revision guides, eg Coordination Group Publications (CGP), who publish a series of revision guides and workbooks – you may remember these from your own GCSEs!

We hope that you enjoy working on your subject knowledge in all three sciences over the summer and look forward to hearing more about your progress in September.

