Module 4: Progression

Presenter notes

This presentation is designed to support CPD leading to the development of a more effective policy within a school relating to the form and function of practical work in science. The particular focus of this unit is planning for progression.

The unit is designed to be delivered in 60 minutes, although this is only a rough indication. The materials are designed to be used flexibly and creatively. If you have not already done so, please refer to the *Introduction Module 1;* this gives the overall background to the project and puts this, and other materials, into context.

Materials needed

- One copy of presentation per participant
- Flip chart or other way of gathering and displaying group contributions
- One copy of A3 progression chart per participant (Task 1)
- One copy of progression planning activity per pair of participants (Task 2)
- One copy of practical activity analysis grid per pair of participants (Task 3)
- *Typical Key Stage 3 Activities* document from the introduction module
- Post-it notes (optional).

References

- *Good Practical Science,* The Gatsby Charitable Foundation, (2017): www.gatsby.org.uk/GoodPracticalScience
- *Getting practical – a framework for practical science in schools,* ASE and partner organisations: www.gettingpractical.org.uk/index.php
- Assessing Pupils' Progress (APP) in Science, QCA: www.stem.org.uk/resources/elibrary/resource/29133/assessing-pupils-progress-app-science-materials
- KS2 Programme of Study for Science: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/425618/PRIMARY_national_curriculum_-_Science.pdf
- KS3 Programme of Study for Science: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/335174/SECONDARY_national_curriculum_-_Science_220714.pdf
- GCSE Science criteria: https://www.gov.uk/government/collections/gcse-subject-content

Outcomes

The outcomes of this session are to:

- Explore the concept of progression in practical science
- Consider a model showing how scientific enquiry might progress from 11-16
- Find out how analysing particular activities can lead to an understanding of how well they support progression.

Slides

Slide 2 (3 minutes). Introduce the outcomes and briefly put in context of your school.

Slide 3 (7 minutes). This slide conveys what to some people might be a slightly tricky message, because it may seem to be counterintuitive. It is fairly obvious that science education over a period of time needs to have a sense of progression – how students move from a simpler to a more complex understanding of science. This applies to skills and processes as well as to concepts.

The key message that is being suggested here is that it probably isn't a good use of time and effort planning for progression in skills on a lesson-by-lesson basis, but it is useful to think through how activities should become more challenging, for example, year-by-year. A school that tries to develop skills in Year 7 (age 12) and then apply them in the same way throughout the rest of Key Stage 3 (ages 11-14) and GCSE is probably not challenging students to make good progress.

Slide 4 (25 minutes). This slide corresponds to two activities. The first is to consider a chart (Task 1) that offers an overview of the way in which 'Working Scientifically' progresses from Year 5 (age 10) to Year 11 (age 16) according to Programmes of Study and GCSE Science criteria. This chart can be accessed as an A3 document and it is suggested that it is printed and circulated. The text for Key Stage 2 (ages 7-11) and Key Stage 3 (ages 11-14) came from the current respective Programmes of Study, and that for Key Stage 4 (ages 14-16) from the criteria developed by the DfE and provided to awarding organisations for the development of the current set of GCSE specifications.

The material is divided into four strands. This division is not part of the regulatory framework, but is offered as a way of grouping the material into strands that is useful in the planning of provision. The slide shows one of these strands; the document shows all four. There may be some discussion about how effectively what is happening in primary schools enables pupils to consistently access the statements listed under Key Stage 2. Acknowledge that there may be some questions around that, but that secondary teachers have the responsibility of getting students to the level identified in Key Stage 4 by age 16. The key question is whether Key Stage 3 is doing its job in preparing students for the challenges of the Key Stage 4 course, and a way of answering that is deciding whether current practice at Key Stage 3 reflects the descriptors shown here.

The second activity involves using an A4 sheet (Task 2), which focuses on one of the four strands. This is based on the second strand, that of gathering and recording evidence.

The activity involves participants working in groups of two or three, and:

- Studying the difference between the Key Stage 2 and Key Stage 3 statements and identifying ways in which the latter are more challenging. Notes should be entered in 'Key points of difference'
- Suggesting one or more practical activities that would give students access to developing those skills at Key Stage 3. These can either be taken from the list provided or from other sources
- Recording particular aspects that might need foregrounding to ensure that the development of that skill is effectively supported
- Then going on to the Key Stage 4 section and studying the difference between the Key Stage 3 and Key Stage 4 statements. Identify ways in which the latter are more challenging. Notes should be entered in 'Key points of difference'
- Suggesting one or more practical activities that would give students access to developing those skills at Key Stage 4. These can either be taken from the specification or from other sources
- Recording particular aspects that might need foregrounding to ensure that the development of that skill is effectively supported.

Slide 5 (20 minutes). This activity develops this idea further. If progression in practical skills is going to be effectively planned for, there needs to be a comprehensive coverage of those skills. There is a risk that, if this is not planned for, it is the same few skills that tend to be accessed each time and some others get scant referencing.

Use the sheet (Task 3) and ask participants to work in small groups to analyse a set of activities. These could be:

- A selection from the *Key Stage 3 Activity List*
- A sequence of activities from a topic in the school's scheme of learning
- Some other selection of activities.

See what emerges from this activity – see if the coverage is fairly even or if there are some parts that don't seem to be reached as often.

It is also worth making the point that activities often have more impact on the development of skills if fewer skills are being addressed at any one time. A sharp focus makes it easier to frame the activity with associated learning objectives, explicit teaching, clear feedback and a sense of whether outcomes have been achieved.

Slide 6 (5 minutes). In this plenary session, consider particular points that should be taken forward into the drafting of policy. The suggestion is that three should be contributed by each small group of teachers to the facilitator.