

# Supporting staff to develop a shared understanding of science assessment



## Carol Sampey outlines how science and assessment can be brought together effectively through highlighting developments at Shaw Primary

Assessment is not something that stands alone and teachers need support to develop their understanding of both assessment practices and the subject being assessed. We were fortunate to take part in the Teacher Assessment in Primary Science (TAPS) project and, in this article, I will explain how a shared understanding of both science and assessment was developed at Shaw Primary School.

At Shaw, we tried to ensure that science assessment was effective across the school by:

- investing time to develop a shared understanding of what 'good science' looks like;
- making teachers aware of how to integrate teacher assessment into every lesson; and
- ensuring that progression in the 'working scientifically' skills took place.

Our first step was to agree key aims and principles to be remembered when planning and delivering science lessons (see Figure 1), a Primary Science Quality Mark (PSQM) activity. All staff were involved in discussing what this meant for us and agreed that: 'Our main aim is to ensure that the children are engaged and enjoying science by the use of careful planning and a

wide range of teaching and learning approaches'.

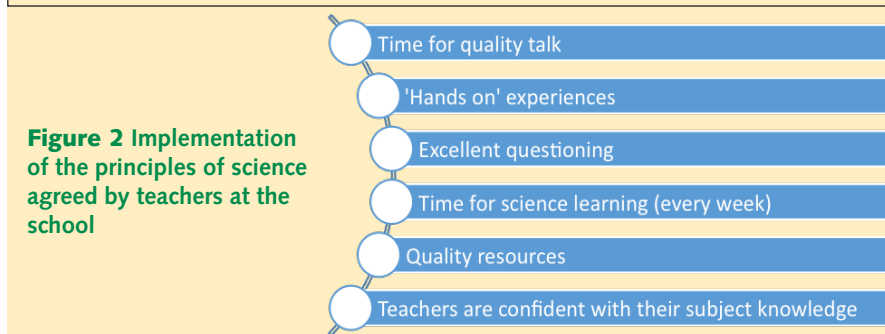
Having agreed WHAT we wanted children to be able to do in science, we then discussed HOW to achieve these things in practice (see Figure 2). Once these key principles had been established, we agreed a curriculum map for science (vital if the school has

mixed age ranges), to ensure that all of the National Curriculum for England (NC) requirements were covered. It was also important for staff to have time to discuss exactly WHAT the statements in the NC Programme of Study actually meant. Some of the statements are very broad and need unpicking, particularly with regard to assessment: this helped all staff to have a shared understanding of expectations. Purchasing a scheme of work may be useful to support and guide staff when planning, especially if you have inexperienced staff who lack confidence in teaching science. However, at Shaw, although the

**Figure 1 Principles for science at Shaw**



**Figure 2 Implementation of the principles of science agreed by teachers at the school**



scheme of work was used for initial ideas, teachers were encouraged to adapt these into activities that made best use of the school's locality, cross-curricular links and ideas that arose from children's own questions.

### Planning with assessment in mind

Well-planned lessons are the key to ensure that teacher assessment is effective. At Shaw, staff used the NC statements to think about the learning outcome that they would expect to see if the children had achieved the expected level in both knowledge AND in working scientifically, and then planned learning objectives accordingly. The PLAN materials published by ASE give a really helpful framework for staff, as the conceptual learning objectives are broken down and guidance is given regarding evidence to look for in the learning. Working scientifically was woven into every lesson and teachers made use of *key questions*, which would help to assess the learning taking place. The TAPS assessment materials and their Focused Assessment lesson plans give a particularly helpful structure for lesson planning to support the development of working scientifically. Formative assessment was ongoing, based on key questioning and observation during the lessons as well as written evidence. Teaching Assistants had a valuable role in gathering the assessment evidence, but needed to be well briefed beforehand. At the end of each topic, the formative assessments were used to make a summative judgement for each child, and recorded.

### Developing a progression in working scientifically

It was in understanding the progression in working scientifically across the school that staff needed most support and, initially, time was devoted to staff development (staff meetings/ teacher development days, etc.) Once established, the Subject Leader regularly reviewed the policy, giving annual reminders of expectations, and briefed all new members of staff so that they were aware of how the school taught and assessed science and, in particular, how skills progression was built up from Early Years Foundation Stage to Year 6 (age 11).

### Supporting structures consisted of:

'Science Stars': our version of 'I can' statements – outlining what children should be able to do in each

year group (see Figures 3 and 4). Staff chose a maximum of two or three skills per topic upon which to focus. The skill was taught and discussed with the children as to what they should be aiming for, what 'success' looked like and involving them in self-assessment.

**Planning Proformas:** to support children (and teachers!) when planning investigations, proformas were used with younger children but, as children moved through Key Stage 2 (ages 7-11), this support was gradually withdrawn so that, by Years 5/6 (ages 10-11), children were expected to plan independently.

**Encouragement to record in a variety of ways:** Science books were used, but a variety of ways to record were encouraged, ranging from floorbooks (especially at Key Stage 1 – ages 5-7), photographs, drama, pictures and diagrams, models and links with literacy and numeracy (e.g. graphs and tally charts, fact files, letter-writing, persuasive writing and news reports, use of ICT, etc). All provided valuable evidence of the learning taking place and many of these can be seen in the TAPS Focused Assessment database.

**Development of Scientific Language:** Word banks for each topic were displayed for the children and incorporated into spelling homework.

**Sentence Structures:** these were modelled to help children to predict, explain their ideas, analyse and draw conclusions.

**Question stems** were displayed to help children to ask their own questions and make decisions as to how to find out the answers.

- We noticed.... happened/ changed when...
- We had a surprise.....

Figure 3 Science star example for Year 2 (age 6-7) – noticing patterns

**We can explain using our science knowledge:**

- From the data in our graph/table we found out the **relationships** between X and Y. (e.g. *the er...er...rule: the faster the X the slower the Y*)
- We didn't think this would happen .... "This is a "spooky" result. It might have happened because...."

Figure 4 Science star example for Year 5/6 (age 9-11) – explaining findings

### Moderation staff meetings

To ensure that the assessment judgements are valid and reliable, it is important that regular moderation takes place. Members of staff were asked to bring along evidence of learning to a staff meeting and agreement was reached both for knowledge and understanding and working scientifically. Initially, this took up a whole staff meeting but, as staff became more confident, this was reduced to a 10-minute slot three or four times a year.

Staff meetings were also used to focus on working scientifically across the school to see if progression was taking place. Work samples were collated as a useful reference bank for staff (and Ofsted). Annual monitoring by the Subject Leader also took place through book scrutiny/ lesson observation/curriculum walks, etc. and evidence from this was used to support staff further if necessary.

### Conclusion

The work to develop a shared understanding of science and assessment across the school is a long-term and ongoing project. Our involvement in the TAPS project has supported a whole school emphasis on science assessment and we have found that, once staff feel confident in WHAT and HOW to teach science, teaching, learning and assessment are more successful. It is important to continue to build and support the shared understanding, with new staff joining the team and new priorities at a local and national level, but a focus on active learning, with both pupils and teachers engaged in quality talk, helps to provide a variety of assessment opportunities and maintain our principles with science at the heart of the curriculum.

### References and resources

- Pan London Assessment Network (PLAN) resources. Available from: [www.ase.org.uk/resources/primary/plan/](http://www.ase.org.uk/resources/primary/plan/)
- Primary Science Quality Mark (see [www.psqm.org.uk](http://www.psqm.org.uk))
- Teacher Assessment in Primary Science (TAPS) resources. Available from: <https://pstt.org.uk/resources/curriculum-materials/assessment>

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See Carol describe science at Shaw Primary here: <http://tinyurl.com/ShawTAPS>