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AN EXPLORATION OF WHOLE-SCHOOL ASSESSMENT SYSTEMS

Figure 1 Assessment doesn't have to be at the end of a unit or in a test form

***Sarah Earle** shares case studies from the Primary Science Teaching Trust College Fellows*

Key words:
Assessment and levelness

Assessment pulls us in many directions: it can help us to adapt our teaching to meet the needs of the children, but it can also help to skew the curriculum in the direction of things that are easily tested. There is a wealth of evidence showing the impact of Assessment for Learning (AfL) (Wiliam, 2011) but is it really possible for whole-school assessment systems to support learning? The Teacher Assessment in Primary Science (TAPS) project, which is funded by the Primary Science Teaching Trust (PSTT), aims to support teachers to make the most of assessment, improving validity, reliability and manageability. The first year has been spent examining the huge variety of strategies and processes currently used in English schools. The team worked with local project schools and analysed submissions for the Primary Science Quality Mark (PSQM) (see Davies *et al.*, 2014). In addition, the author visited a selection of PSTT College Fellows whose stories are summarised below.

Case studies from PSTT College Fellows

Assessment is an integral part of planning at Burscough

Wendy Charlton is a year 2 teacher (ages 6–7) and science subject leader (SSL) at Burscough Primary School, a one-form-entry village school in Lancashire with both PSQM Silver and an Ofsted outstanding rating. She has been teaching for nine years and SSL for eight years, gaining the Primary Science Teacher of the Year award in 2012.

Wendy has been working on developing assessment in her school for some time and is keen to develop a system that combines planning and assessment, fully embedding AfL within purposeful enquiries that respond to the children's interests and where progression is clear. She has moved from using units of work that focus on teaching activities to using progression grids, where the next step on the ladder is identified for a group and activities are planned that support the children's move in that direction (Figure 2). By using 'steps to success' and 'I can' statements, the teachers and children know what they are aiming for, considering 'what a good one looks like' (WAGOLL) and how to get there. Teachers can note on their planning those who have not yet achieved the objective (emerging) and those who have gone further (exceeding), the rest having met the objective (expected). The notes on planning form part of the ongoing assessment, which can be summarised at summative intervals, along with the group progression grids for 'working scientifically' (the English National Curriculum's name for 'enquiry').

The planning structure itself is based around thinking skills: notice, remember, compare, contrast, group and classify, which are very much the skills of 'working scientifically' and form the basis for concept development across the curriculum. Wendy is keen that the main vehicle for the development of these skills is talk, explicitly discussing their development with the children. Units begin with a 'wow', to capture interest, and time to consider the children's ideas and questions: *What do we know about plants? What would we like to know about plants?* Lessons in the middle of the sequence are based around the development of thinking skills and the children's questions: *What does the stem do? Are all leaves the same? How do seeds leave a plant?* Units of work have a purpose, often an end-of-unit

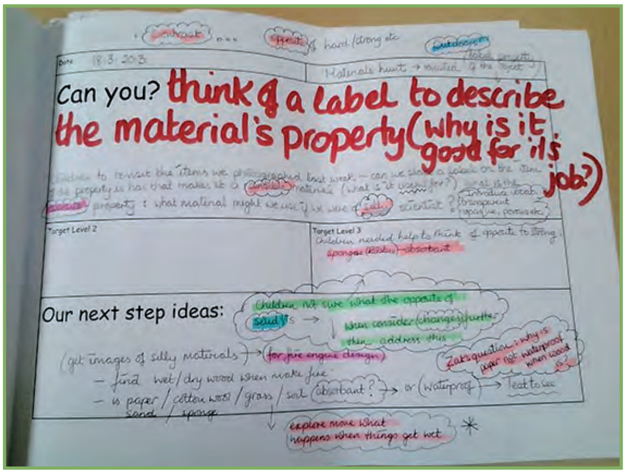


Figure 2 **Planning sheets include space for notes on children's achievements and next steps**

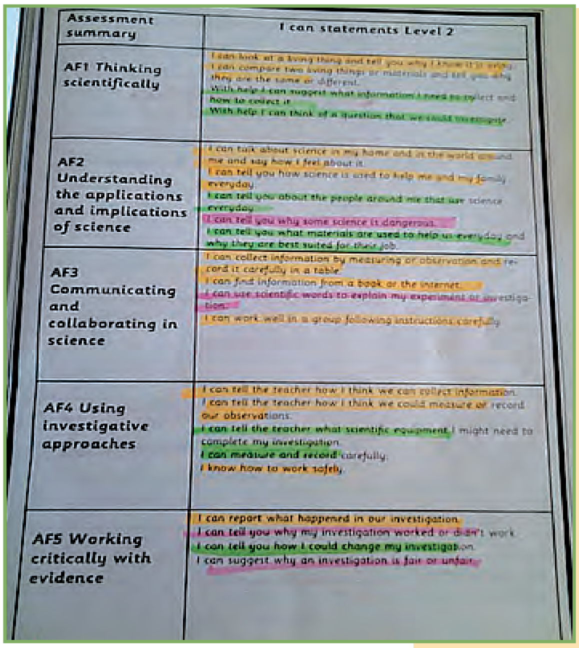
challenge (which can also serve as a summative assessment) such as making mint truffles using mint from a plant looked after by the class.

Ongoing record keeping owned by the children at Malcolm Sargent

Nina Spilsbury has been teaching for 35 years and her roles have included science subject leader, key stage 1 (ages 5–7) coordinator and literacy consultant. She is currently teaching a range of year groups at Malcolm Sargent Primary School, a three-form entry academy in Stamford, Lincolnshire. Nina gained the Primary Science Teacher of the Year award in 2011 and explains that her key interests are in practical science and AfL. She is aware of the pressures on time from literacy and numeracy, so to ensure there is enough practical work she suggests a 'must-do' investigation per unit and organises a whole-school science week each May, which is one of the highlights of the year for children and staff. This also enables staff to 'consolidate and review' to support the judgement of end-of-year levels for 'working scientifically'. Nina suggests that AfL creates time '*because we often underestimate children*', who can actually turn out to be the best teachers or experts in the classroom. She is clear that assessment is not about looking at one single piece of work: it is an ongoing process that should take account of a range of information before making decisions.

Nina set up a whole-school approach to science assessment with the aim of creating an ongoing record of progress that is owned by the children and supports teacher planning. She created a booklet called the 'DNA journal', which contained levelled 'I can' statements for both enquiry and subject knowledge. Teachers use the 'I can' statements as lesson objectives, and success criteria can be differentiated using the progression of statements within the journal. The journal is not a separate assessment record; it is used as an integral part of the lesson, as the statements are highlighted by teachers or children during or after the lesson and it is this that makes the system manageable (Figure 3). This could be recorded on the board with children writing their initials next to the 'I cans' when they are doing a practical lesson, or in the journal with a date or annotation. The onus is on the children to show that they have 'got it', which could be in an individual or group discussion with the teacher. This process becomes more independent as the children get older, with year 6 (ages 10–11) children noting how it helps them to set themselves targets. Summary grids on the front and back contain spaces for fine-grade levels at the end of each term, allowing progress to be tracked as the paper journal follows the child through the school.

Implementation of the journal was supported by staff meetings, consideration of Assessing Pupils'



Assessment summary	I can statements Level 2
AF1 Thinking scientifically	I can look at a living thing and tell you why I know it is living. I can compare two living things or materials and tell you why they are the same or different. With help I can suggest what information I need to collect and how to collect it. With help I can think of a question that we could investigate.
AF2 Understanding the applications and implications of science	I can talk about science in my home and in the world around me and say how I feel about it. I can tell you how science is used to help me and my family everyday. I can tell you about the people around me that use science everyday. I can tell you why some science is dangerous. I can tell you what materials are used to help us everyday and why they are best suited for their job.
AF3 Communicating and collaborating in science	I can collect information by measuring or observation and record it carefully in a table. I can find information from a book or the internet. I can use scientific words to explain my experiment or investigation. I can work well in a group following instructions carefully.
AF4 Using investigative approaches	I can tell the teacher how I think we can collect information. I can tell the teacher how I think we could measure or record our observations. I can tell the teacher what scientific equipment I might need to complete my investigation. I can measure and record carefully. I know how to work safely.
AF5 Working critically with evidence	I can report what happened in our investigation. I can tell you why my investigation worked or didn't work. I can tell you how I could change my investigation. I can suggest why an investigation is fair or unfair.

Figure 3 **Children and teachers highlight 'I can' statements within lessons**

Progress (APP) standards files and a buddy system, whereby more experienced colleagues paired with less experienced. One key point is that although the children have science books, there is no expectation that every statement will be supported by a piece of written evidence, since the journal acts as the tracker of progress.

Time to explore children's ideas and respond to feedback at Northbury

Kulvinder Johal has been teaching for over 20 years at Northbury, a four-form entry primary school in Barking (900 pupils) where 79% of the children have English as an additional language. During this time she has attended science network meetings (led by Liz Lawrence, past chair of ASE), achieved PSQM Silver and received the Primary Science Teacher of the Year award in 2012. She is now assistant head teacher, with a key role in bringing infant and junior processes in line across the newly amalgamated school.

A key focus for assessment at Northbury is the elicitation of children's ideas. Units of work are in outline form, each beginning and ending with a thought shower (Figure 4). This allows both children and teachers to see progress at the end of the unit, but perhaps more importantly it gives the teacher a starting point for planning. Detailed plans are not completed in advance, which allows lessons to take into account initial

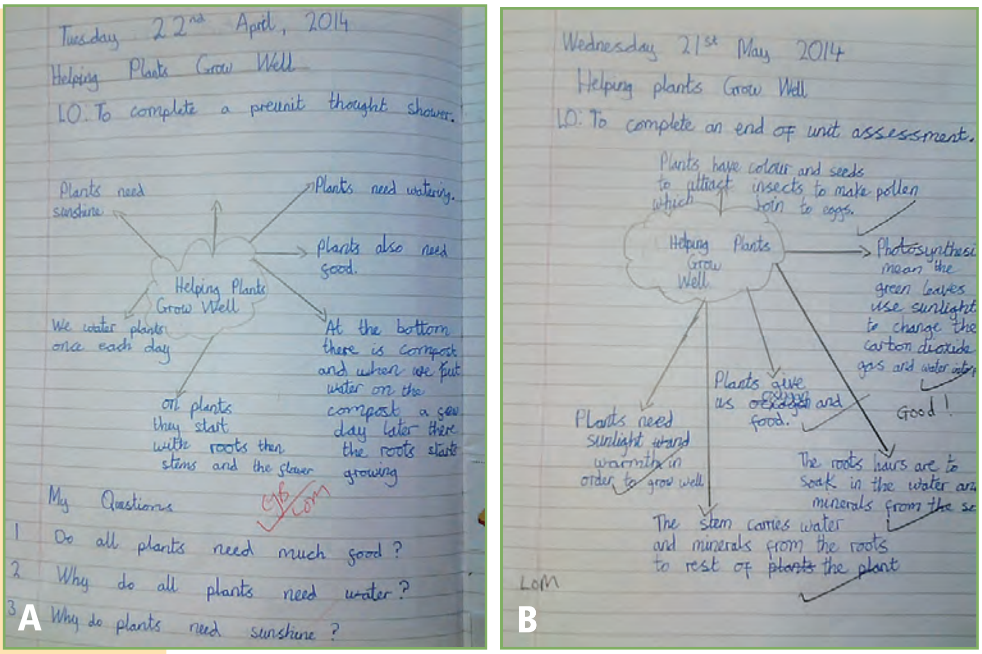


Figure 4 Children see their own progression in (A) pre- and (B) post- unit thought showers

questions raised by the children and their starting points (misconceptions or previous knowledge), particularly important because pupil mobility is high.

Further evidence of the children's learning is achieved by an emphasis on recording and marking in key stage 2 (ages 7–11). This is not at the cost of time for practical work since classes aim to have two lessons for science per week: one focused more on concept development or 'writing up' and the other focused on practical exploration or investigation. Teachers' marking contains a judgement about the lesson (LOM – learning objective met, LOPM – partially met, or, rarely, LONM – not met) and often a follow-up question or task focusing on what was missing or on extending the learning. Children are given time to respond to the marking comments and questions – classic AfL.

In addition to completing an end-of-unit thought shower, children are also asked to self-assess a list of 'I can' statements on a 'Record of Achievement' sheet, which originated in the 'must, should, could' end-of-unit expectations. Together with this, they return to their original thought shower questions and may be asked to do other tasks such as labelling or a true/false quiz.

Planning and tracking for scientific enquiry is supported by an enquiry group tracking sheet (Figure 5). The sheets list enquiry criteria for each level and each child in the ability group is named at the bottom of the sheet, with movement between groups or absence annotated. The sheets are highlighted termly, used for planning differentiation and passed onto the next teacher. Highlighting may be dated or different colours used for different years. Teachers use a range of information, from the Sc1 tracking sheet, oral/class work and end-of-unit activities, to give a fine-grade level for the whole-school tracker three times per year.

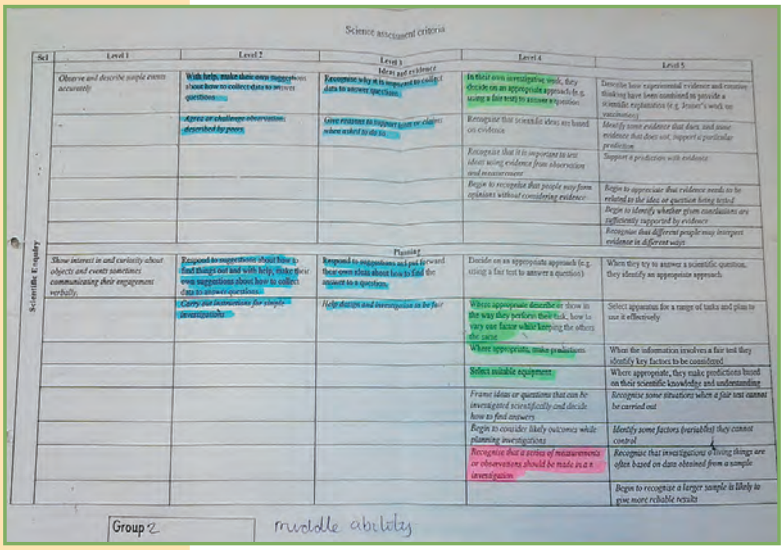


Figure 5 Group tracking of enquiry skills

Guidance

Each assessment system described above uses different 'paperwork' but shares a number of features of good practice:

- **Assessment is embedded in the planning process;** for example, notes are made on planning or plans develop from the next steps identified for the children.
- **Children are encouraged to take responsibility for their learning;** for example, by judging themselves against 'I can' statements or responding to feedback.
- **Assessment is ongoing;** a range of information can be used formatively to inform next steps and can be summarised for summative judgements.
- **There is a clear understanding of 'what good science looks like' across the school;** for example, using skills progression grids, 'I can' statements and moderation discussions.

Notice that there is not one way to do this and that using 'old' levels or 'new' end-of-year objectives is not the key that will make a difference to the learning: these are just the tools we measure with. Children make progress in conceptual and procedural knowledge when the learning opportunities are purposeful and interesting. Tracking this progress is possible by annotating planning, using floorbooks, adding to thought-showers, highlighting National Curriculum objectives or 'I can' statements. Which system you choose will depend on what works for your school or age group. To support decision-making in whole-school assessment processes, TAPS is developing a School Evaluation tool, the first version of which can be found in Davies *et al.* (2014). The team are currently creating an interactive version of the tool, which will contain exemplars and links to support materials.

References

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