IMPACT ON PRACTICE

Examples from the Teacher Assessment in Primary Science (TAPS) project

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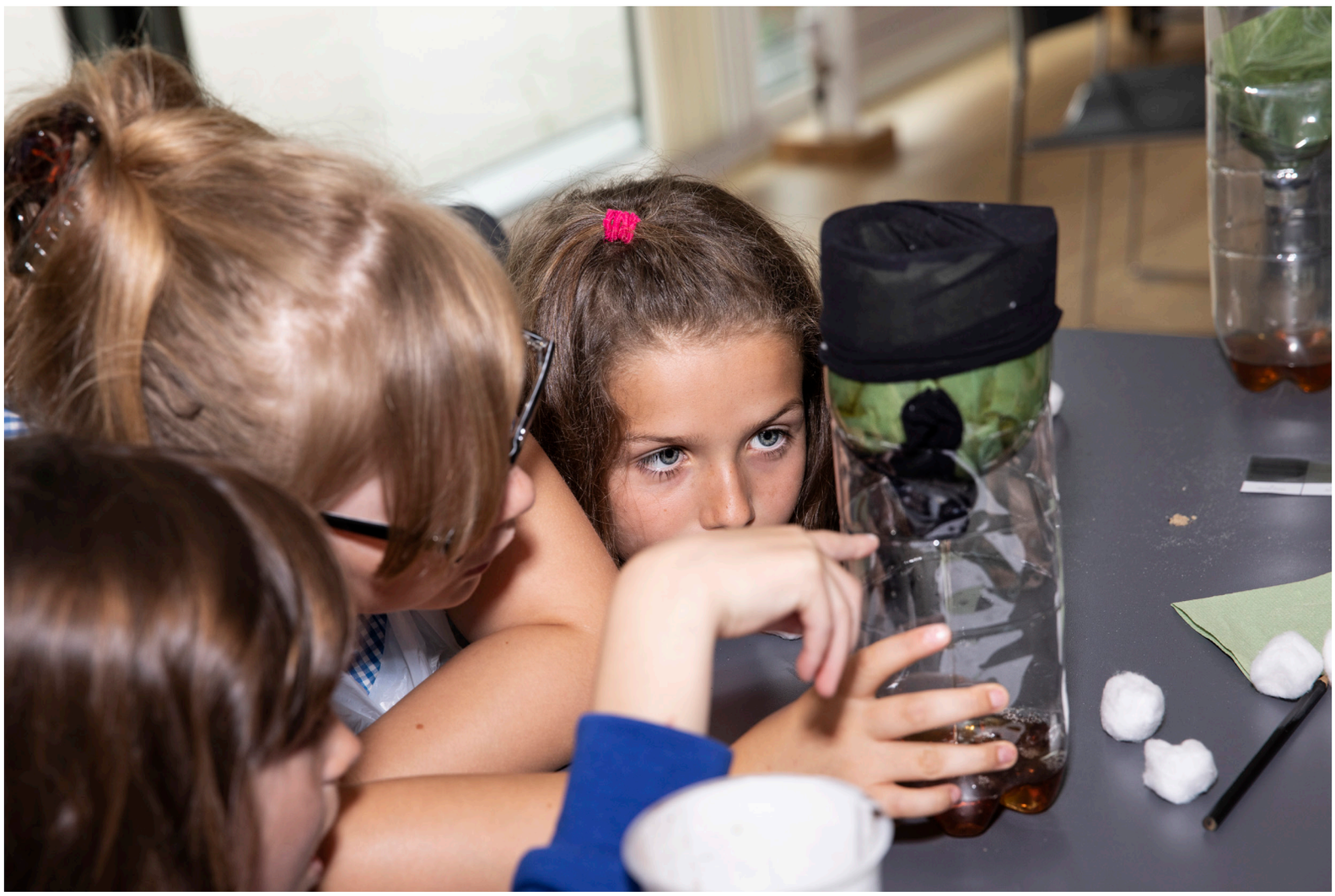
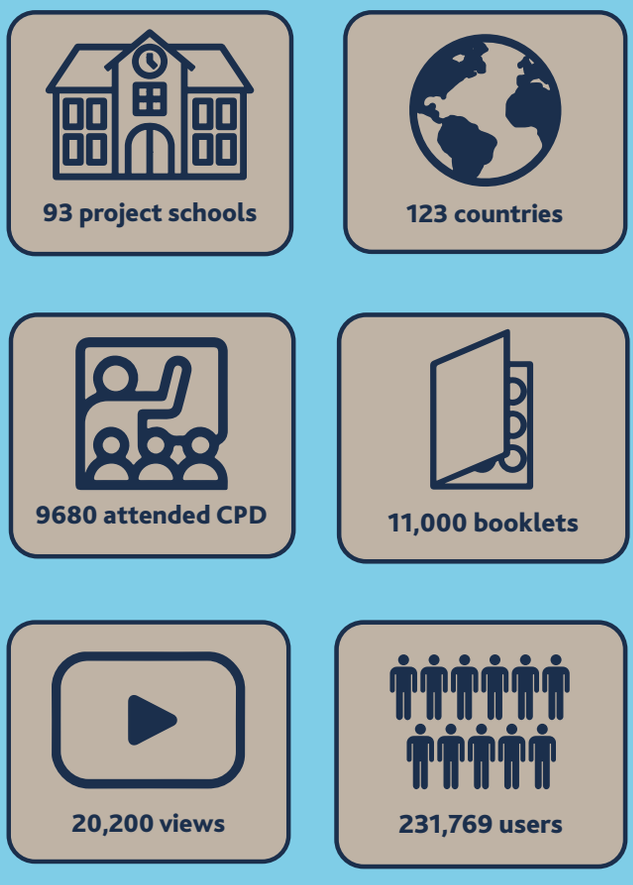


THE TAPS PROJECT

The Teacher Assessment in Primary Science (TAPS) project is based at Bath Spa University and was initially funded by the Primary Science Teaching Trust from 2013. TAPS works together with teachers across the UK to research practice and develop resources to support the teaching and assessment of science in primary and early years settings.

A key principle for TAPS is that assessment is an embedded part of teaching and learning, whereby responsive teachers support their pupils to be active in their learning, with pupil work useful for both formative and summative purposes. These principles are encapsulated in the TAPS pyramid model, which provides a framework, together with online examples, for schools to develop practice. TAPS has also developed the Focused Assessment approach to support teachers and pupils to focus on one part of an enquiry at a time, within the context of a whole investigation.



KEY MECHANISMS FOR HOW TAPS WORKS

Over the last ten years, TAPS has developed a range of resources and professional learning materials to support teaching and assessment in primary science. Many teachers (including those from different countries), find the TAPS resources online, for example, using the Focused Assessment plans with their class. We have found that the Focused Assessment approach is the 'easy way in' to TAPS, but that further professional learning helps to make the most of the materials. To support implementation of the TAPS approach, a three-day professional learning programme has been developed called Focus4TAPS.

This helps teachers to:

- Develop their understanding of Working Scientifically and how to teach it, focusing on just one element at a time.
- Explore a range of strategies and real examples from schools for teaching science in different year groups and topics.
- Become more confident in teaching science so that they know when to scaffold the learning and when to support pupils to make decisions in their investigations.
- Develop responsive teaching by eliciting pupils' scientific ideas and building on these through formative assessment.
- Take part in moderation discussions to help to develop a shared understanding of progression in primary science.
- Adapt the approach to their own context and support others in their school.

"The children were more confident and independent… they were able to make changes to help improve their results" (Teacher, Scotland)

"I found myself realising the importance of assessment throughout science lessons…Thinking about assessment in general – got me better at it"
(Pre-service teacher, Northern Ireland)

INDEPENDENT EVALUATION

The Education Endowment Foundation funded an independent evaluation of the Focus4TAPS programme across England in 2019-22, carried out by University College London (Mujtaba et al. 2022). The evaluation was an efficacy randomised controlled trial involving 121 schools and 2,882 Year 5 pupils (age 9-10) in the 2020-21 academic year.

KEY CONCLUSIONS

- Pupils in Focus4TAPS schools made the equivalent of two additional months' progress in science, on average, compared to pupils in other schools. This result has a high security rating.
- Pupils in Focus4TAPS schools had similar, and positive, attitudes and orientations towards science to pupils in other schools.
- Greater compliance with the programme (e.g. attending more training sessions and conducting more lessons) was associated with higher science test scores.
- Teachers in Focus4TAPS schools reported higher confidence for some aspects of teaching and assessing science than teachers in other schools, and believed that various benefits followed from the programme, e.g. changing how they taught Working Scientifically and how they applied formative assessment.

WHAT DID THE TEACHERS SAY

Year 5 teachers said that they believed that the programme benefited pupils through:

- The provision of more practical work (and less writing);
- Practical/enquiry skills;
- Confidence in general and confidence in undertaking investigations;
- Engagement, excitement, and interest;
- Independence, autonomy, and ownership;
- More discussions about science and opportunities to learn new science vocabulary;
- More experiences including generally fostering being/thinking like scientists (p76-7).

Teachers described a refined/adapted approach to planning, delivery, and assessment around the TAPS ideals, including citing the TAPS principle of focusing on one skill at a time, and with less emphasis on recording and writing everything (p72).

Mujtaba, T., Sheldrake, R., Hodgen, J., & Reiss, M. (2022) Focus for Teacher Assessment of Primary Science (Focus4TAPS): Evaluation Report. London: Education Endowment Foundation: www.educationendowmentfoundation.org.uk/projects-and-evaluation/projects/focus4taps

TEACHER'S COMMENTS

"I know what I'm looking for now, it just makes it makes sense." (p91)

"Letting them go... You could actually see how they were working things out for themselves a lot better." (p91)

"It's definitely become clearer how each child is doing in science. I think it's developing their Working Scientifically skills. So it's just more obvious where each child is in their attainment and how they can move on." (p77)

"Working scientifically it's less overwhelming." (p91)

"I like being involved in research." (p80)

TAPS RESOURCES

FOCUSED ASSESSMENT PLANS AND EXAMPLES

The TAPS Focused Assessment approach proposes that within the context of a whole enquiry, one element is selected as the focus for teacher attention and any pupil recording. This makes primary science investigations more manageable in a busy classroom, together with providing a tight focus for formative assessment. A wide range of lesson plans and pupil work examples are available on the main TAPS website: www.pstt.org.uk/unique-resources/taps/

GUIDANCE BOOKLETS AND MAPPING TOOLS

Guidance booklets are also available on the main TAPS website to support primary science teaching. These include: Early Science, Cognitive Science, Transition and implementation guides for each UK nation. With each nation of the UK taking a different approach to curriculum design, overviews are available mapping the TAPS lesson plans onto the appropriate curriculum statements. The plan-do-review enquiry cycle is presented for each nation to support coverage: a Working Scientifically Wheel for England, a Skills Flower for Northern Ireland, a Scientific Skills Flag for Scotland and a Being Curious Flower for Wales.

THE TAPS PYRAMID AND EXAMPLES

The TAPS pyramid outlines a 'formative to summative' model of assessment, whereby everyday classroom activities are primarily used formatively, with some informing summative summaries when required. The pyramid can be used as a school self evaluation tool and as a source of examples. The blue pupil and teacher layers contain examples of classroom practice, for example, choosing a focused skill for a lesson or adapting activities to support all learners access an investigation. The yellow 'shared understanding' layer considers ways to develop the range of science (validity) and the consistency of judgements (reliability). The green layers provide ideas for summarising learning for reporting purposes. Clicking on each layer or box will take users of the Pyramid site to numerous examples from schools across the UK: https://taps.pstt.org.uk/

'The resources helped me to focus my teaching and science, paying particular attention to the scientific skill development. ' (Teacher, Scotland)

"Really clear and engaging. Changed the way I plan and teach science." (Teacher, England)

'Helps with progression, so you can see the steps that are needed.' (Teacher, Wales)