

# TAPS Cymru: Teacher Assessment in Primary Science school self-evaluation tool

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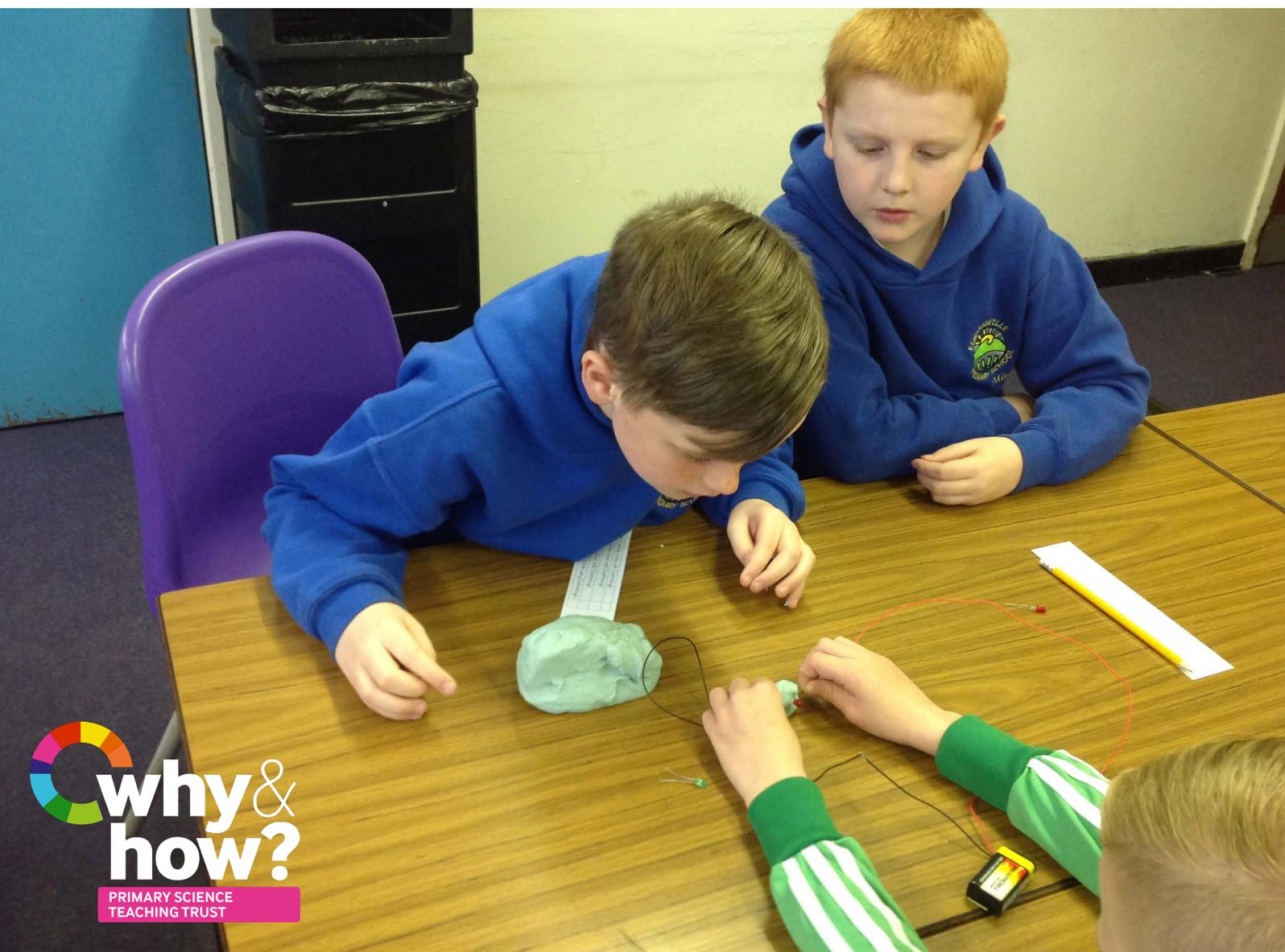


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# INTRODUCING THE TAPS PYRAMID MODEL

The Teacher Assessment in Primary Science (TAPS) Cymru project is based at Cardiff Metropolitan University, and is part of the wider TAPS project, funded by the Primary Science Teaching Trust (PSTT). TAPS aims to develop support for valid, reliable and manageable assessment, which will have a positive impact on children's learning.

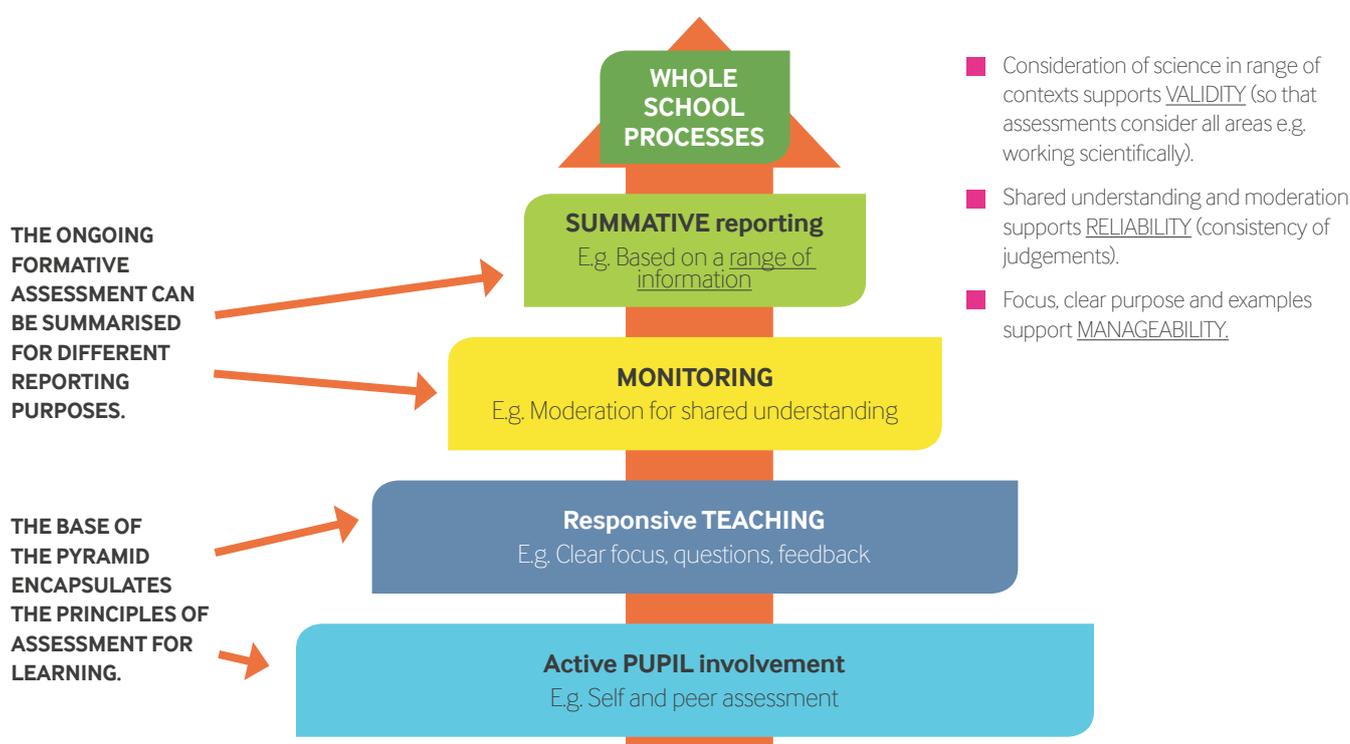
## Background

Wynne Harlen and colleagues (Harlen et al. 2012; funded by the Nuffield Foundation) recommended that the rich formative assessment data collected by teachers in the course of ongoing classroom work in science should also be made to serve summative reporting purposes. They developed a pyramid model, which was operationalised by the TAPS team at Bath Spa University (Earle et al. 2015), where assessment information flowed from classroom practice to whole school reporting. This flow of information is represented by the **ORANGE ARROW** on the TAPS pyramid.

## The TAPS pyramid

The TAPS pyramid school self-evaluation tool provides a framework to support science subject leaders in identifying strengths and areas for development in school assessment systems. The suggestions in each box aim to strengthen the validity, reliability and manageability of assessment in primary science.

The TAPS Cymru team worked with local project schools, the Primary Science Quality Mark and PSTT College Fellows to examine current approaches to assessment in science and technology in Wales, and to populate the TAPS pyramid with examples.



## Recommendations for where to start

The blue 'Pupil layer' and 'Teacher layer' at the base of the pyramid encapsulate the principles of Assessment for Learning. They include boxes which focus on: clear learning objectives or success criteria; use of questioning, feedback and next steps; peer and self assessment. Schools should begin by focusing on these layers since this is not only the foundation of the whole system, it is also where changes will have the most impact on pupil progress in primary science.

For examples and plans related to specific topics or year groups, see the Focused Assessment database tab on the TAPS section of the PSTT website.

## Using the school self-evaluation tool

The TAPS pyramid provides a structure to support school self-evaluation and is available in a number of formats on the PSTT website. You can use the colour version in this booklet, write on a black and white printable version, or use the interactive pdf which allows you to traffic light your assessment systems on your own saved copy. The downloadable interactive pdf also provides a supportive bank of examples, which can be found by clicking on each box. A selection of TAPS Cymru examples can be found on the back page of this booklet and a website is in development which will include further examples.

 USING THE SCHOOL SELF-EVALUATION TOOL  
<http://tinyurl.com/pyramidintro>

 TAPS CYMRU  
<http://tinyurl.com/TAPScymru>

## References

- Earle, S., D. Davies, K. McMahon, C. Collier, A. Howe, and R. Digby (2015) TAPS pyramid interactive pdf. Bristol: Primary Science Teaching Trust.
- Harlen et al., (2012) Developing policy, principles and practice in primary school science assessment. Nuffield Foundation.

# Science assessment: school self-evaluation tool

SCHOOL: \_\_\_\_\_

DATE: \_\_\_\_\_



DIRECTION OF INFORMATION FLOW THROUGH SCHOOL

## 4. WHOLE-SCHOOL REPORTING

Science assessment processes provide a **valid and reliable summary** of pupil achievement at the end of key Stages

## 3. SUMMATIVE REPORTING

Teachers **summarise** achievements in terms of **what pupils can do**, not only in terms of levels, grades or %  
Eg. *progress in skills is passed onto the next teacher.*

Parents/carers receive **oral and written reports** that identify the next steps for their children  
Eg. *at parents evening, comments on homework*

**Summaries of pupil progress** across the cohort draw on a range of information  
Eg. *learning across a range of contexts is used to decide support or extension needs*

FEEDBACK FROM DIALOGUE WITH SCHOOL LEADERSHIP, GOVERNORS AND PARENTS INFORMS CHANGES TO SCIENCE ASSESSMENT

## 2. MONITORING OF PUPIL PROGRESS

Teachers base their summative judgements of pupils' learning on a **range of types of activity**  
Eg. *not reliant on one snapshot to make overall judgement.*

Teachers take part in **moderation/discussion** with each other of pupils' work in order to align judgements  
Eg. *staff meeting discussions of science work.*

There is a **shared understanding of progression** in science  
Eg. *staff map progression of skills. TAs are involved in assessments.*

Pupils are **aware of the criteria** by which their work over a period of time is judged  
Eg. *examples of what good science looks like are displayed.*

A **manageable system for record-keeping** is in operation to track and report on pupils' learning in science  
Eg. *expectations on planning which annotate, end of topic grids, cans.*

TEACHER-PUPIL/PARENT CONFERENCES INCLUDE DIALOGUE ON ATTAINMENT IN SCIENCE

## 1. ONGOING FORMATIVE ASSESSMENT

Teachers **plan opportunities** to elicit pupils' science knowledge and skills  
Eg. *plans show range of elicitation strategies at variety of times. Eg. Beg/End/End lesson.*

Teachers involve pupils in discussing **learning objectives and criteria for success**  
Eg. *discuss what good observation or conclusions look like.*

Teachers gather evidence of their pupils' learning through **questioning/discussion and observation**  
Eg. *Open Qs, class mindmap/concept cartoon, TA posit quotes, feedback, annotated photos.*

Teachers gather **evidence of their pupils' learning** through study of the products of activities and tasks  
Eg. *any recording, models, sorting.*

Teachers use assessment to advance pupils' learning by **adapting the pace, challenge and content of activities**  
Eg. *support or challenge in response to pupils.*

Teachers use assessment to advance pupils' learning by **giving feedback** to students about how to improve  
Eg. *marking oral feedback, next steps, extension Qs.*

Teachers use assessment to advance pupils' learning by **providing time for students to reflect** on their own work  
Eg. *read and respond time.*

Pupils identify their **existing ideas** learning needs and interests, and consider those of peers.  
Eg. *mindmaps, annotated drawings, KWL grids, mini whiteboards, post-its, talk partners.*

Pupils **focus on science knowledge, understanding, skills and attitudes in learning objectives and success criteria**  
Eg. *be clear about science focus rather than presentation etc.*

Pupils **assess their own ideas** and work against known criteria  
Eg. *traffic lighting or highlighting objective, commenting on whether predictions are supported.*

Pupils **assess peers'** ideas and work against known criteria  
Eg. *comment on another group's presentation, give 2 stars and a wish for piece of work.*

Pupils use assessment to advance their learning by **acting on feedback**  
Eg. *respond to mini plenary advice in second half of lesson, make improvements in next investigation.*

Pupils collaboratively (with peers/teachers) **identify next steps** in learning  
Eg. *identify which part of the success criteria is missing, consider how to make the measurement more accurate.*

# Examples of good practice

## JUDGEMENTS BASED ON A RANGE OF ACTIVITIES



Summative judgements can be more valid if based on a range of information. Edwardsville Primary use a range of types of activity to provide information which can be used formatively or summatively. For example, during the latter half of a Year 3 topic on healthy eating the pupils: investigated egg shells, predicting and collecting results about which liquid would stain teeth; made models of teeth and 'chatterboxes' to name teeth and their functions; and designed posters to promote healthy eating and dental care. The teacher used information from these tasks and her own observational notes to support her summative judgements.

## SHARING LEARNING OBJECTIVES AND CRITERIA FOR SUCCESS

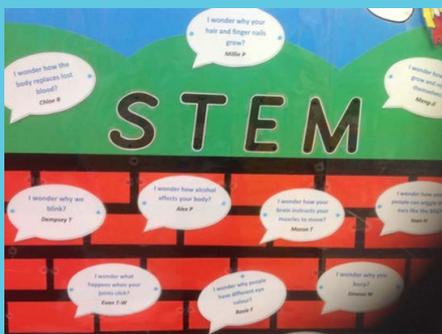
When teachers share and discuss learning objectives or criteria for success, pupils become more active in their learning. Tongwynlais Primary use de Bono's 'Thinking Hats' to support the development of thinking and enquiry in science. At Foundation Phase the teacher wears a coloured hat to illustrate the kind of thinking which will help the pupils to be successful in the activity. For example, a white hat for gathering information, a black hat for assessing risks or a green hat for creating new ideas. Explicit discussion about the kind of science thinking provides opportunities for reflection, for example, in Key Stage 2 where pupils are asked to identify which hats would help to meet today's learning objective.



 **SUCCESS CRITERIA (THINKING HATS)**  
<http://tinyurl.com/tongwynlais>

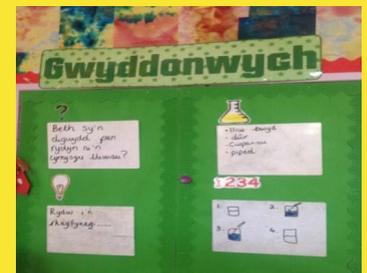
## PUPIL ENQUIRY IN STEM WEEKS

As part of school STEM (Science, Technology, Engineering and Maths) weeks, pupils at Blaencwm Primary develop their own lines of enquiry. They identify what they would like to know next by raising questions on a Wonder wall, selecting an aspect of a topic that particularly interests them to investigate. The pupils work on their projects both at home and in school, and celebrate their projects in a School Science Fair.

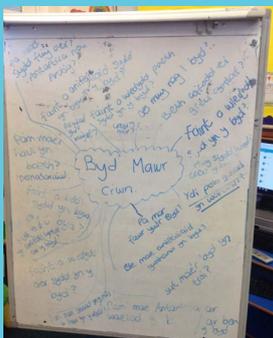


## SHARED UNDERSTANDING OF SKILLS

At Coed Y Gof a consistent whole school approach is used to develop pupils' scientific skills. The subject leader has devised a framework called 'Gwyddonwylch' (Excel-Sci) which supports the development of one or two specific skills at a time. Each skill has a child friendly logo to help pupils recognise the skills focus, for example, a conical flask for choosing equipment and light bulb for prediction. The skills progression framework supports a shared understanding, with both staff and pupils using skills success criteria.



## PUPIL VOICE WALL

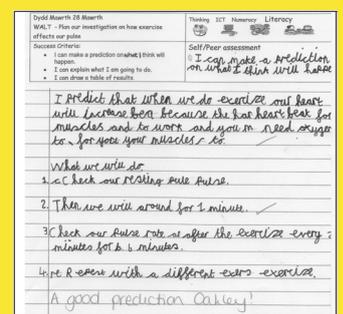


At the start of a topic at Ysgol Pencae, pupils identify their current ideas and raise questions to lead the learning during the topic. For example, in Year 1 the class teacher records pupils' questions on a Pupil Voice Wall (Wal Llais Plant). During lessons the teacher refers back to the Pupil Voice Wall to show how the pupils' questions are being considered. In Key Stage 2, pupils complete KWL grids to consider what they **K**now, **W**ant to find out and, at the end, what they have **L**earnt.

 **PUPIL VOICE WALL**  
<http://tinyurl.com/TAPSpencae>

## THE IMPORTANCE OF DISCUSSION FOR MODERATION

Moderation can be useful for more than checking judgements of pupil outcomes. By taking part in moderating discussions, teachers can develop their understanding of progression and assessment. At Garnteg Primary each class teacher brings examples of children's work from their termly enquiry, to a whole school staff meeting, where teachers work in pairs to moderate and agree the judgements against the Foundation Phase Outcomes, or the National Curriculum descriptors. Other pairs then make suggestions for next steps which could progress the pupil's learning.



 **MODERATION**  
<http://tinyurl.com/TAPSGarnteg>

The new focused assessment database of plans and examples is now available:

[www.pstt.org.uk/resources/curriculum-materials/assessment](http://www.pstt.org.uk/resources/curriculum-materials/assessment)

If you would like to offer further examples or provide the TAPS team with feedback, please email: [primary.science@bathspa.ac.uk](mailto:primary.science@bathspa.ac.uk)

 **SUPPORT FROM TAPS**  
<http://tinyurl.com/TAPSupport>

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[www.pstt.org.uk](http://www.pstt.org.uk)

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