Developing shared understanding

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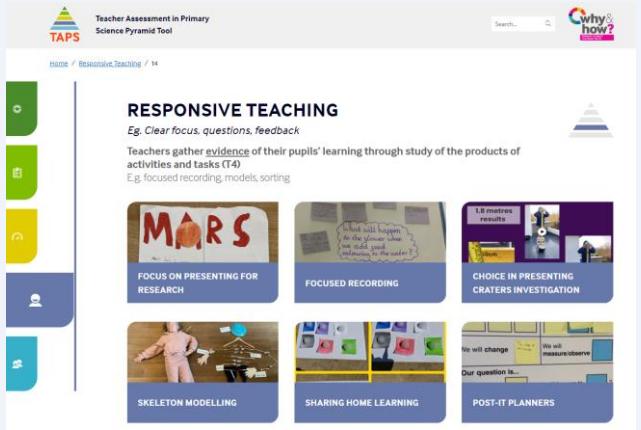
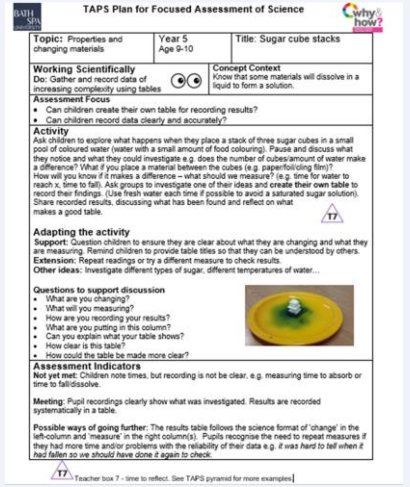
Teacher Assessment in Primary Science (TAPS)

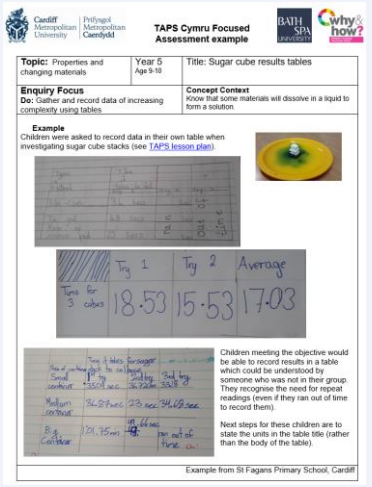
- Assessment as **embedded** part of teaching and learning
- Building a **shared understanding** of progression in primary science
- Working with teachers since 2013 across the UK to develop:

Pyramid model: egs of wide range of approaches



Focused Assessment activity plans & pupil work egs

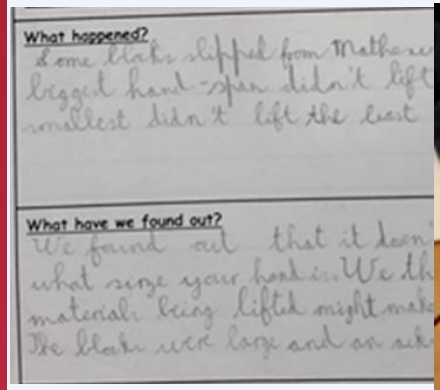


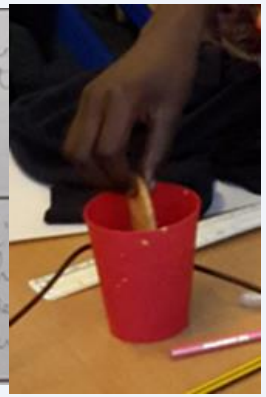


TAPS Focused Assessment approach

Skills focus in the context of a whole enquiry

Evaluate

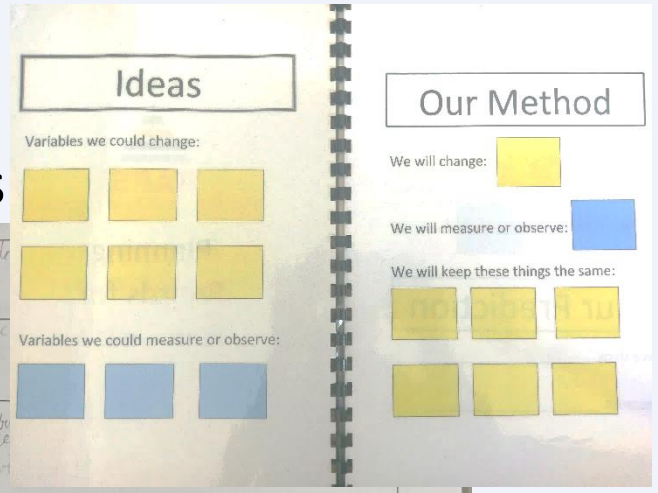


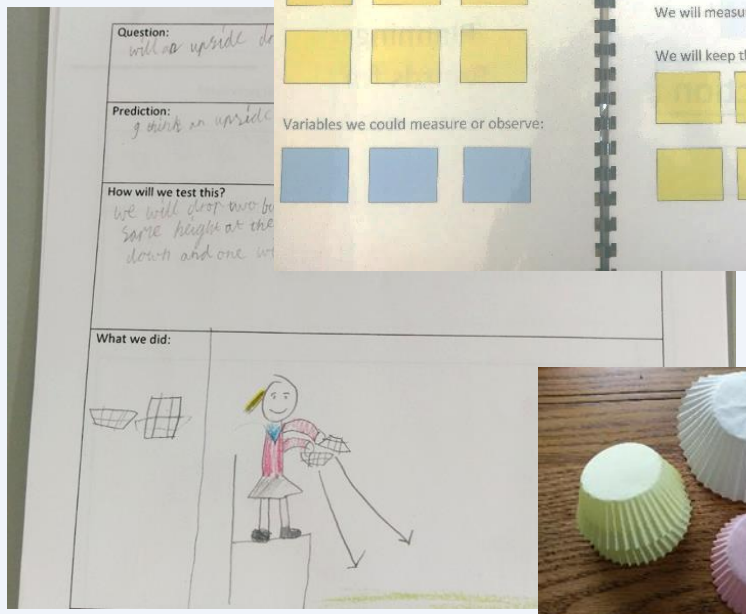


Interpret results > draw conclusions

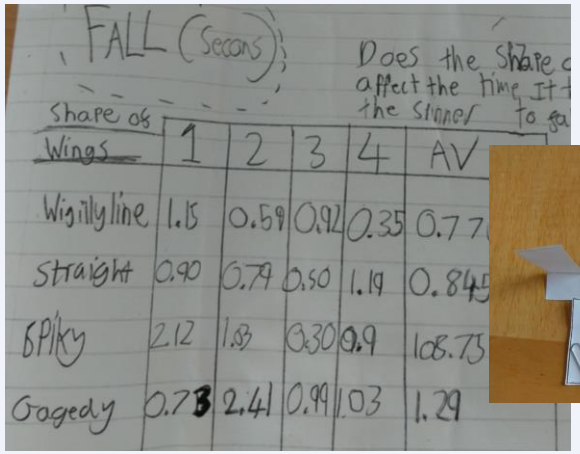
Ask Qs

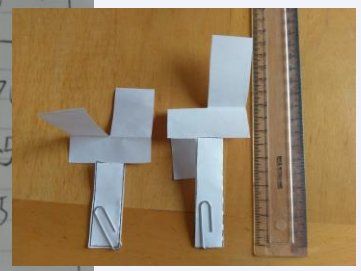
Control variables



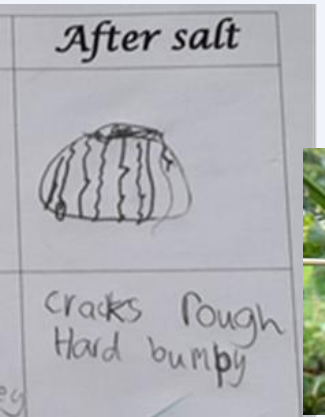


Accurate measurements





Close observation



TAPS Working Scientifically Cycle

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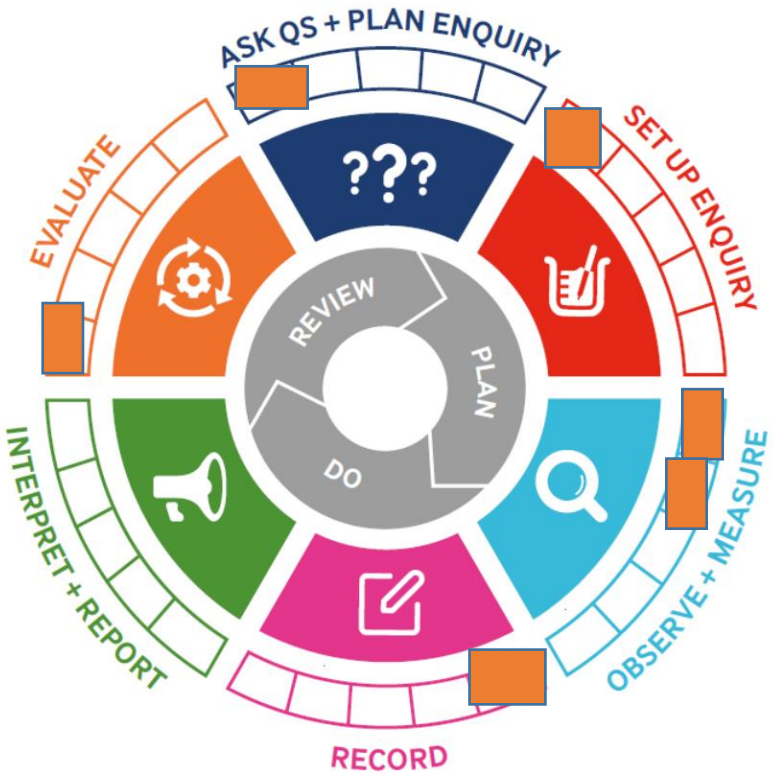
Primary Science Teaching Trust

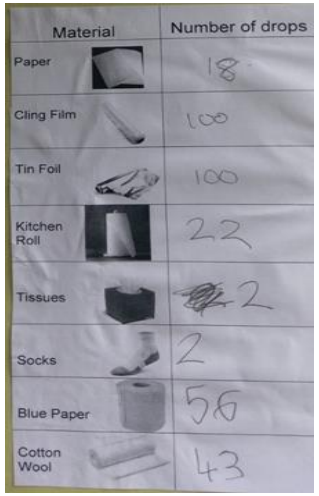
Our science skills working wall

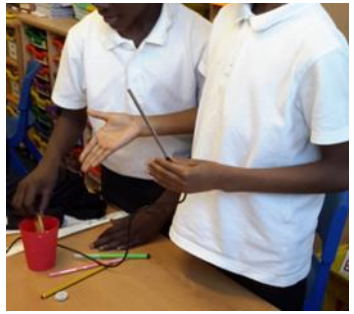
Remember when we planned our own Rocket mice investigations?



Remember when presented our research about life cycles?

Remember when we measured which material let through the least water?





Remember when we evaluated the way we dunked biscuits?

Would something like this wheel help with WS coverage?

Ongoing formative assessment can be summarised more easily if there is a FOCUS

Summative reporting

Ongoing rich formative assessment can be summarised from a range of contexts

Shared understanding

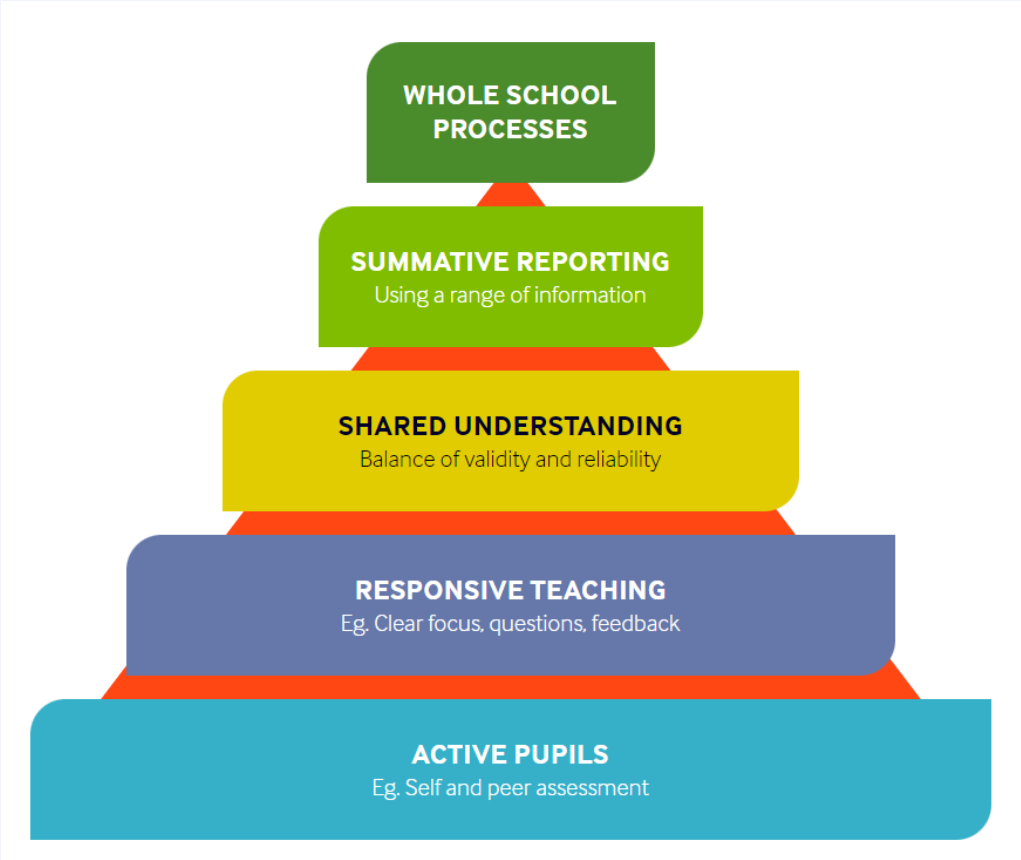
Responsive teaching

Assessment to support learning

Active pupil involvement

Key principles of TAPS

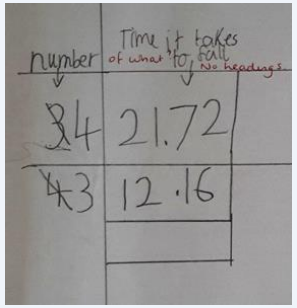
Developing shared understanding

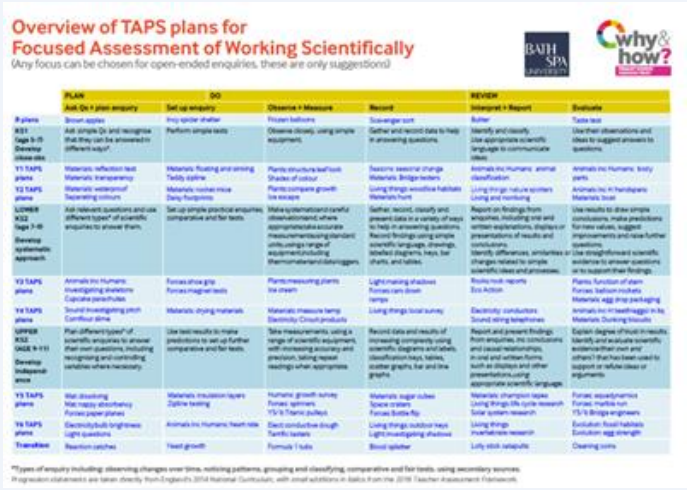


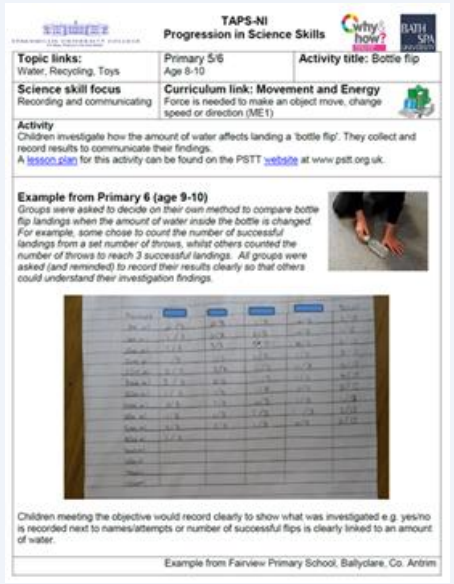
Key to supporting progression and utilising assessment info

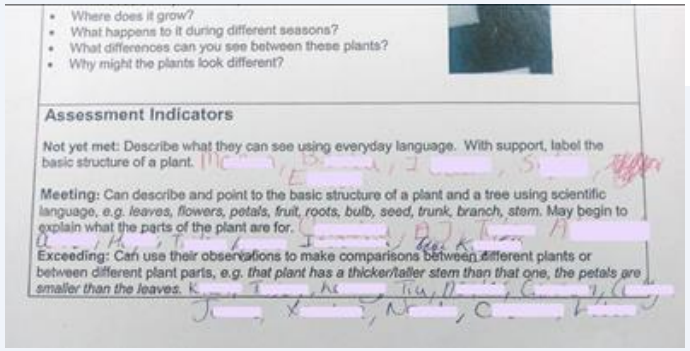
Developing shared understanding

ShU1 Range of activity	ShU2 Moderation discussion	ShU3 Understand progression	ShU4 Pupils aware of criteria	ShU5 Manageable recordkeeping









Judgements draw on range of activities

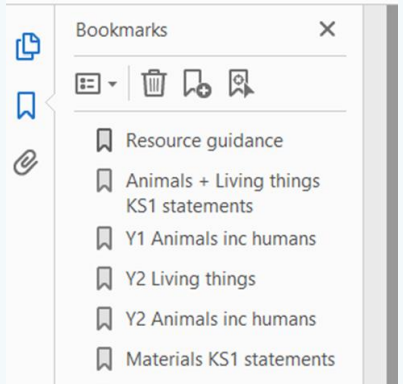
ShU1
Range of activity

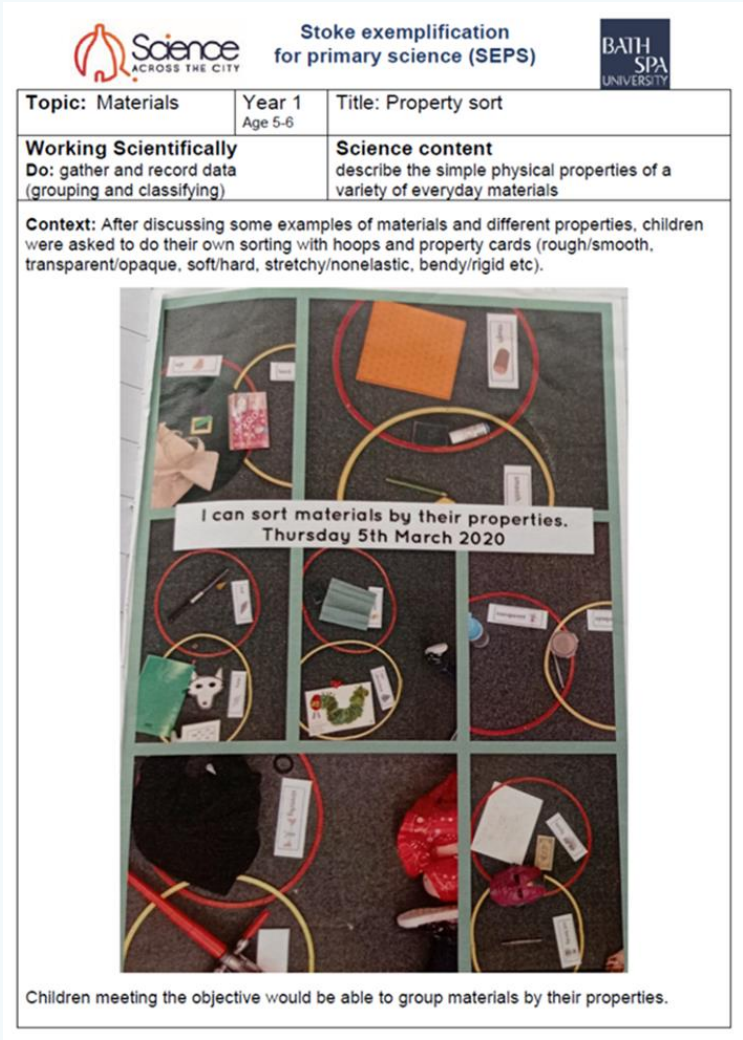
- Judgements can be more valid if based on a range of information.
- Range activities can provide information which can be used formatively or summatively.
- For example, during the latter half of a Year 3 topic on healthy eating the pupils:
  - investigated egg shells, predicting and collecting results 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.

Year 3
Edwardsville Primary, Merthyr Tydfil

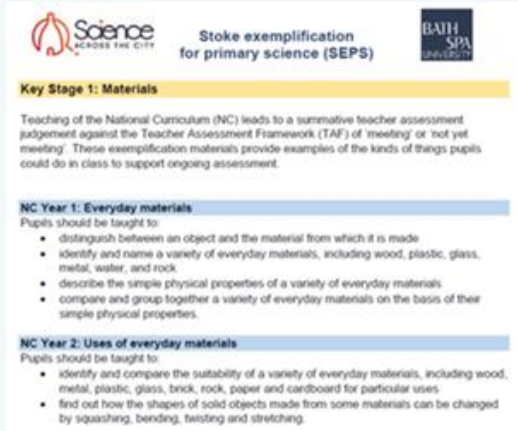
NEW: Stoke exemplification for primary science (SEPS)

- Pupil work collections for KS1 and KS2
- Support for end of KS judgements
- Use bookmarks on left to jump to your topic or year group





https://tinyurl.com/SEPSwork



Moderation discussions

ShU2 Moderation discussion

Look at a snapshot (single activity):

- Can a judgement be made?

Look at a collection > summary:

- What feeds into an overall judgement?

Look at examples from different year groups:

- Is there progression?
- What evidence can you see for WS?

Science ACROSS THE CITY

Stoke exemplification for primary science (SEPS)

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Topic: Materials	Year 1 Age 5-6	Title: Property sort
Working Scientifically **Do:** gather and record data (grouping and classifying)		**Science content** describe the simple physical properties of a variety of everyday materials

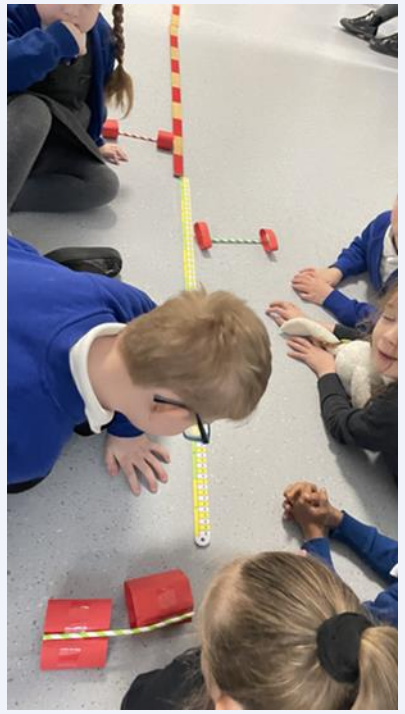
Context: After discussing some examples of materials and different properties, children were asked to do their own sorting with hoops and property cards (rough/smooth, transparent/opaque, soft/hard, stretchy/nonelastic, bendy/rigid etc).

Children meeting the objective would be able to group materials by their properties.

Whole school investigations

ShU3 Understand progression

- New example from Scotland
- O wings across the school
- Shows increasingly systematic control of variables



Sidlaw View Primary School, Dundee, Scotland

ShU4
Pupils aware of criteria

Taste testing FS St Colmcilles

EVALUATING
From: talking about what they have done...
To: drawing conclusions and explaining accuracy

Shades of colour FS Ballyclare

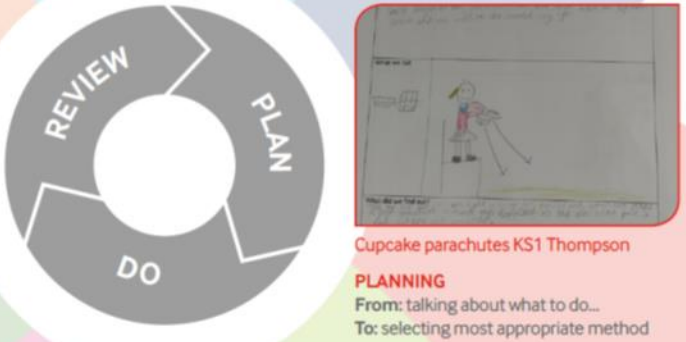
OBSERVATION
From: describing using senses...
To: suggesting reasons

Separating colours KS1 Doagh

QUESTIONING
From: being curious...
To: asking questions which build on ideas

Bottle flipping KS2 Fairview

COMMUNICATING
From: simple recording...
To: selecting most appropriate methods for task and audience



Cupcake parachutes KS1 Thompson

PLANNING
From: talking about what to do...
To: selecting most appropriate method

Titanic pulleys KS2 Fairview

DOING
From: using simple methods to compare data...
To: choosing appropriate techniques and carrying out tests.

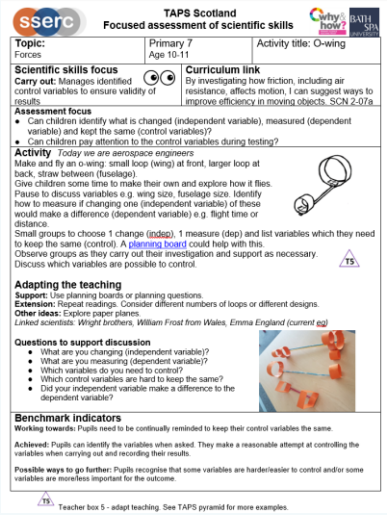
Brown apples, Kilronan

PREDICTING
From: seeing possibilities...
To: making, testing and evaluating predictions

Science expectations on display

New PSTT website

Guidance, Lesson plans, Pupil work examples



TAPS Scotland
Focused assessment of scientific skills

Topic: Forces	Primary 7 Age 10-11	Activity title: O-wing

Scientific skills focus
Carry out: Manages identified control variables to ensure validity of results

Curriculum link
By investigating how friction, including air resistance, affects motion, I can suggest ways to improve efficiency in moving objects. SCN 2-07a

Assessment focus
- Can children identify what is changed (independent variable), measured (dependent variable) and kept the same (control variables)?
- Can children pay attention to the control variables during testing?

Activity *Today we are aerospace engineers*
Make and fly an o-wing: small loop (wing) at front, larger loop at back, straw between (fuselage).
Give children some time to make their own and explore how it flies.
Pause to discuss variables e.g. wing size, fuselage size. Identify how to measure if changing one (independent variable) of these would make a difference (dependent variable) e.g. flight time or distance.
Small groups to choose 1 change (indep). 1 measure (dep) and list variables which they need to keep the same (control). A planning board could help with this.
Observe groups as they carry out their investigation and support as necessary.
Discuss which variables are possible to control.

Adapting the teaching
Support: Use planning boards or planning questions.
Extension: Repeat readings. Consider different numbers of loops or different designs.
Other ideas: Explore paper planes.
Linked scientists: Wright brothers, William Frost from Wales, Emma England (current eg)

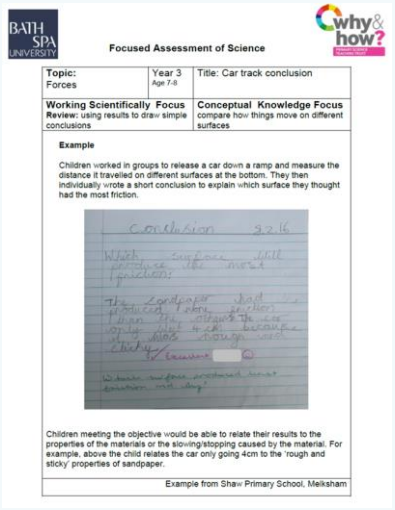
Questions to support discussion
- What are you changing (independent variable)?
- What are you measuring (dependent variable)?
- Which variables do you need to control?
- Which control variables are hard to keep the same?
- Did your independent variable make a difference to the dependent variable?

Benchmark indicators
Working towards: Pupils need to be continually reminded to keep their control variables the same.

Achieved: Pupils can identify the variables when asked. They make a reasonable attempt at controlling the variables when carrying out and recording their results.

Possible ways to go further: Pupils recognise that some variables are harder/easier to control and/or some variables are more/less important for the outcome.

Teacher box 5 - adapt teaching. See TAPS pyramid for more examples.



Focused Assessment of Science

Topic: Forces	Year 3 Age 7-8	Title: Car track conclusion

Working Scientifically Focus
Review: using results to draw simple conclusions

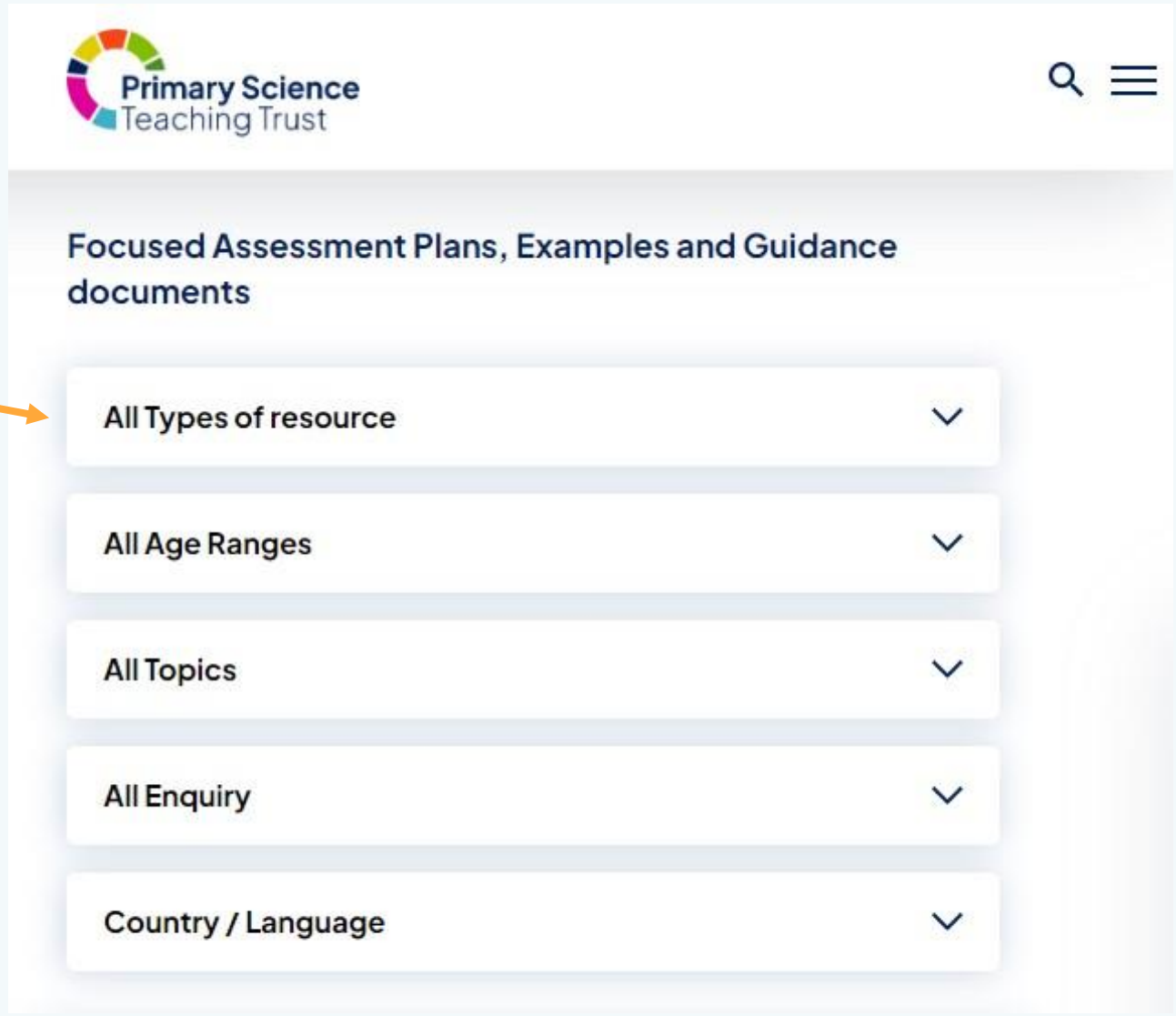
Conceptual Knowledge Focus
compare how things move on different surfaces

Example

Children worked in groups to release a car down a ramp and measure the distance it travelled on different surfaces at the bottom. They then individually wrote a short conclusion to explain which surface they thought had the most friction.

Children meeting the objective would be able to relate their results to the properties of the materials or the slowing/stopping caused by the material. For example, above the child relates the car only going 4cm to the 'rough and sticky' properties of sandpaper.

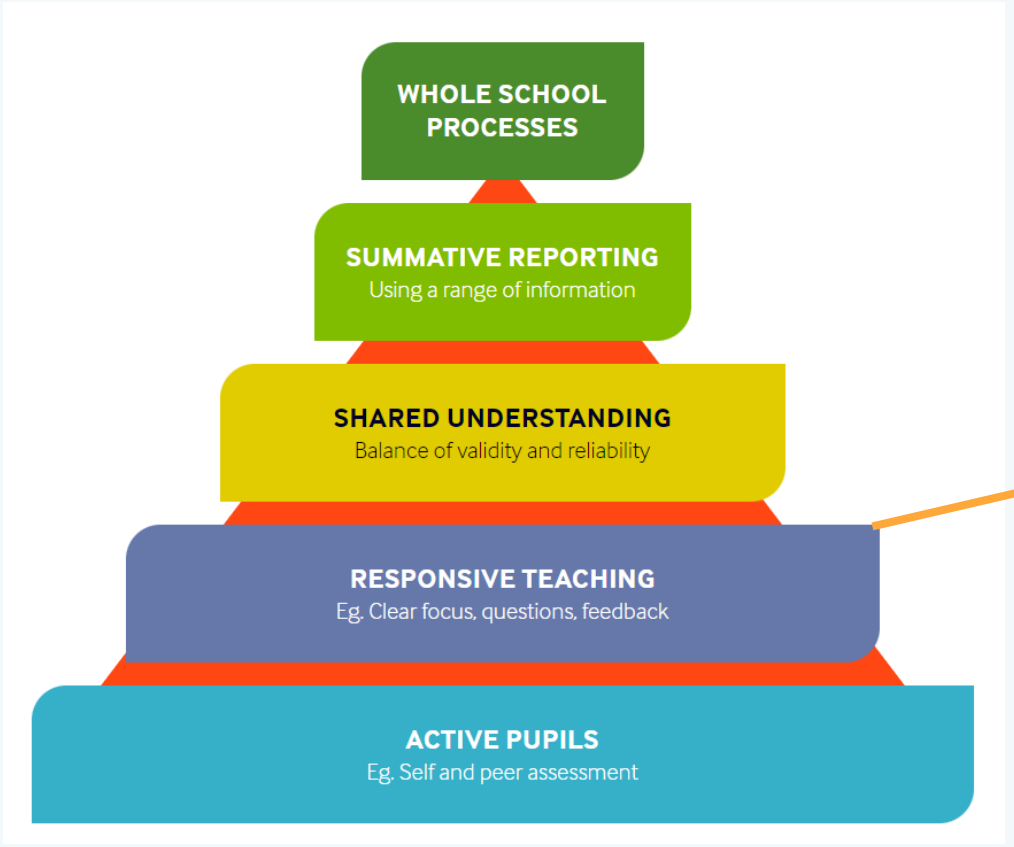
Example from Shaw Primary School, Melksham

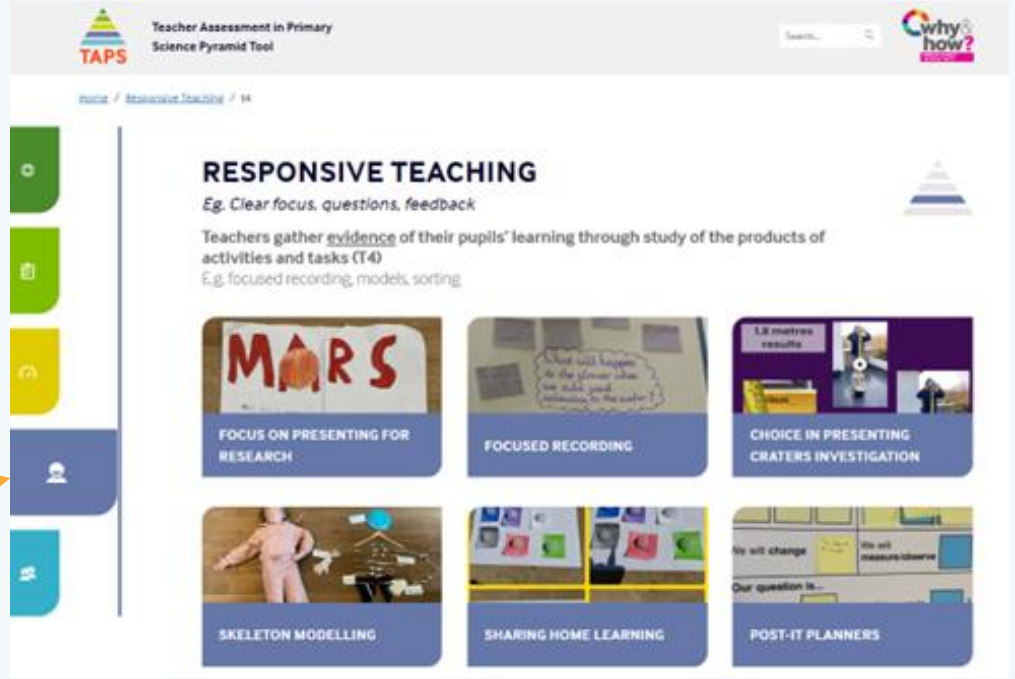


https://pstt.org.uk/unique-resources/taps/

TAPS

Plus pyramid site with examples of practice from across the UK





https://taps.pstt.org.uk/

Any questions?

- To offer new examples:
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