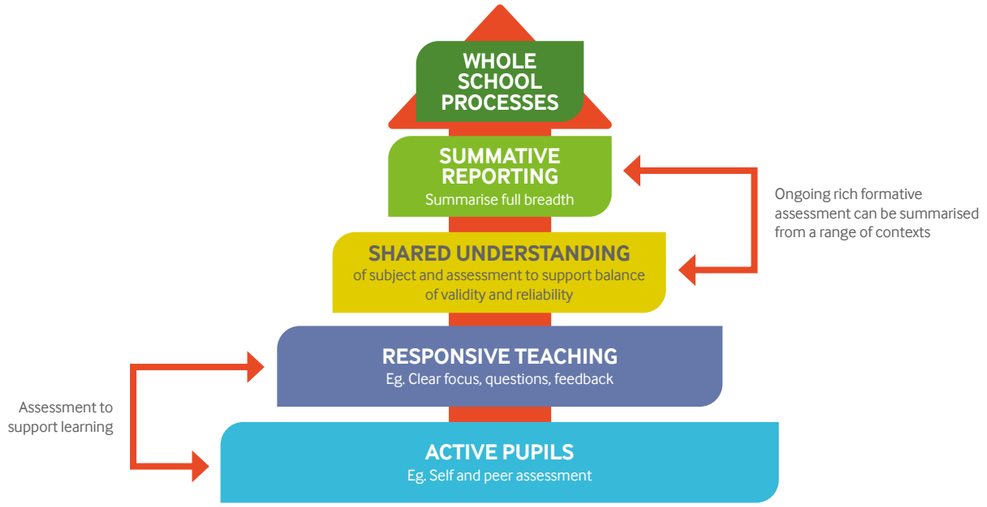
TAPS Scotland

Teacher Assessment in Primary Science (TAPS)
support for teaching scientific skills

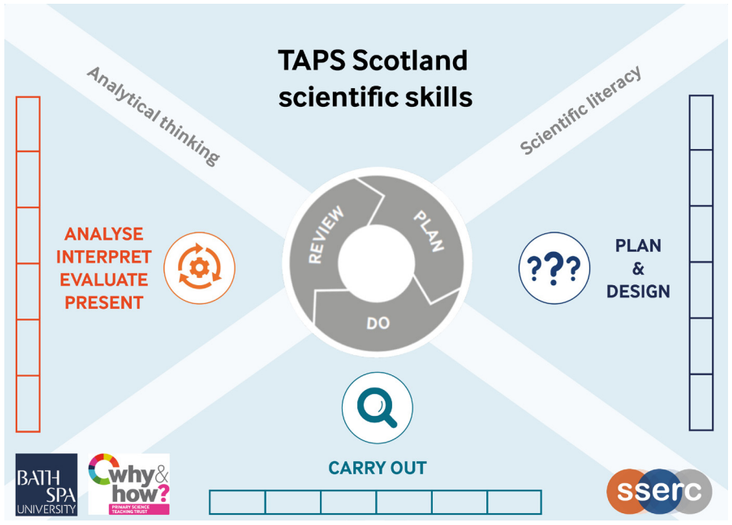
September 2021

TAPS Scotland

TAPS Scotland (2019-21) is part of the Teacher Assessment in Primary Science project, which is based at Bath Spa University and funded by the Primary Science Teaching Trust. TAPS has developed the Focused Assessment approach to support teachers and pupils to focus on one part of an inquiry at a time, within the context of a whole investigation. Such focus is a key part of the TAPS pyramid model, which provides a framework, together with online examples, for schools to develop practice.

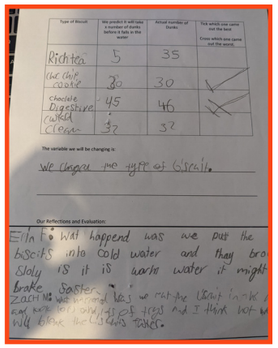


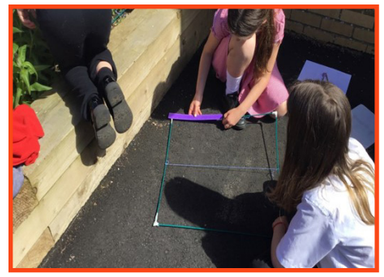
TAPS Scotland worked with SSERC and their Primary Cluster Programme teachers from across the country to develop a range of new resources. The Science Skills Flag (below) can be used in class to direct attention to the focused skill in each lesson. Colouring or dating an edge section can help to track coverage, and placing examples around the flag on the wall can help maintain the profile of science skills. The skills progression grid (final page), is summarised from Education Scotland's Benchmarks (2017) and contains a mapping of topic links to TAPS Focused Assessment lesson plans. A small selection of examples are provided on the next page, with more available on the TAPS websites. Pupil outcomes from each focused activity can be used formatively, to consider next steps for the class or individual, and/or summatively to inform summaries for the next class teacher or for parents.



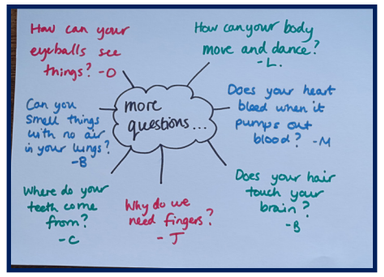
TAPS Scotland team: Dr Sarah Earle, Euan Mitchell, Hayley Sherrard, together with the many teachers who have shared their practice and trialled the resources.

Examples of practice





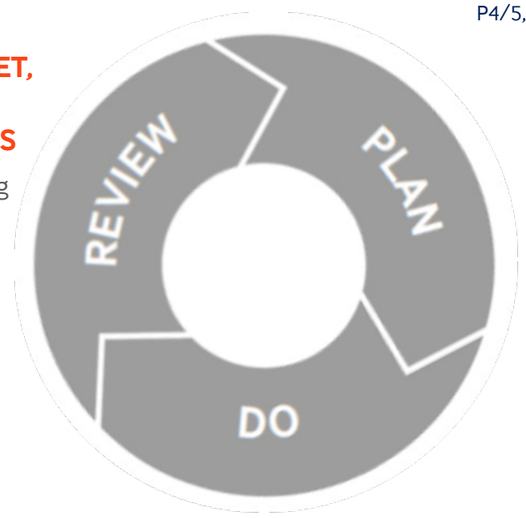
Analysing dunking biscuits results and evaluating flower sampling quadrats P5-6, Peel PS, West Lothian



Asking questions about the human body for research, or about sound for testing e.g. 'how far can a whisper travel?' (P1/2, P4/5, Uplawmoor PS, East Renfrewshire)

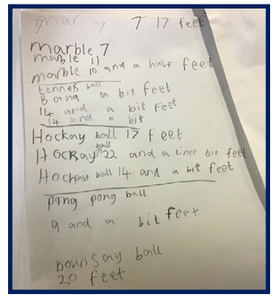
ANALYSE, INTERPRET, EVALUATE, PRESENT FINDINGS

Discussing and sharing learning with others

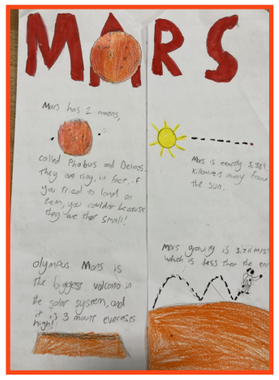


PLAN & DESIGN

Explore, question, predict, design, identify variables



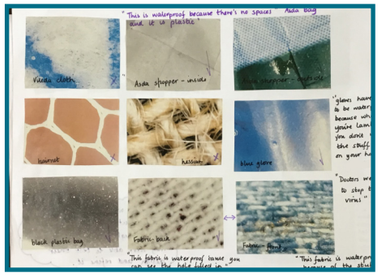
Discussing fair testing and deciding how to measure the distance balls travel (P3, Newhill PS, Perth & Kinross)

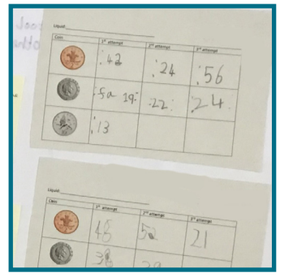


CARRY OUT

Use senses, observe, collect measurements, control variables

Presenting solar system research (P7, Stobhill PS, Midlothian)





Observing closely when investigating waterproof materials and recording number of drops on coin (P1-3, Ballantrae PS, South Ayrshire)

For these examples and more on the website, thanks go to: Aly Austin, Emma Burton, Nicola Connor, Donna Hanley, Jenny Meighan, Yvonne Templeton, Nicola Roberts, Paul Tyler, Cath Milne, Collette Ashworth and Martin Donald.

Progression of inquiry and investigative skills

with skills summarised from Education Scotland's Benchmarks (2017) and links to TAPS Focused Assessment activities

	PLAN AND DESIGN	CARRY OUT	REVIEW	
	Explore, question, predict, design, identify variables	Use senses, observe, collect measurements, control variables	Analyse, interpret and evaluate	Present findings
Early	Explores & observes through play. Asks questions, makes simple predictions and suggestions to answer the question.	Discusses obvious risks & protection. Uses their senses to acquire info. Measures using simple equipt & non-standard units.	Recognises similarities, patterns & differences in findings. Relates to everyday experiences. Discusses, with support, how the experiment might be improved.	Communicates findings to others verbally & through drawings, photographs, displays & simple charts. Responds to Qs about their investigation.
P1 TAPS plans	Brown apples Teddy zipline, Scooping sounds Incy shelter	Frozen balloons Senses Walk, Shades of colour *Forensic footprint	Taste test *Scavenger sort	Making butter Toy forces
1st	Collaborates with others to identify Qs. Makes predictions about the scientific investigation/ enquiry being planned. Contributes to the design for carrying out scientific investigations.	Identifies risks & hazards & ensures safe use. Collaborates to undertake investigations. Observes, collect info & makes measurements using appropriate equipment & units.	Interprets findings and discusses links to the original question. Reports on limitations of their investigation & possible improvements. Relates findings to their wider experiences of the world around them.	Presents info using a range of methods inc. tables, charts/diagrams, with labels/scales. Reports in writing, orally or visually. Structures, with support, to present findings in a coherent & logical way.
P2-4 TAPS plans	*Daisy footprints Dunlop balls, Cupcake parachutes Magnet tests, Shoe grip, Reflection, Transparency Investigate skeletons Float & sink, Waterproof Separating colours	*Seasonal change, Leaf look Plants: structure, Growth, Measuring Woodlice habitats, Feeding, Ice escape Bridge testers, Rocket mice Car ramps, Make shadows *Forensic fingerprints Ice cream, Drops on a coin	Animal classification *Nature spotters, Balloon rockets Handspans Boat materials, Egg packaging, Macintosh waterproofing	Living and non-living, Function of stem, Wind power vehicles Body parts Rock reports
2nd	Formulates questions & predictions (hypotheses), with assistance, based on observations & information. Identifies the independent, dependent & controlled variables, with assistance. Anticipates some risks.	Applies appropriate safety measures. Contributes to carrying out all the procedures. Makes observations, collects info & measurements using approp devices & units. Manages identified controlled variables to ensure validity of results.	Draws basic conclusions consistent with findings. Recognises anomalous results & suggests possible sources of error. Evaluates the investigation & suggests one way of improving it if it was to be repeated.	Presents data/information choosing tables, charts, diagrams, bar/line graphs. Reports collaboratively & individually. Collates, organises & summarises findings, with assist, using structural headings/Qs. Uses sci vocab & ackn sources (assisted).
P5-7 TAPS plans	Drying, Space travel Qs *Flower sampling, *Bird beaks Invest pitch, Paper planes Light questions, Bulb brightness Heartrate, Reaction catches, Yeast Cornflour slime, Dissolving *Insulation, *Nappy absorbency	*Local survey, Measuring temperature Craters, *Camouflaged moths Spinners, Bottle flip Titanic pulleys, Conductive dough Investigate shadows, O-wing Growth survey, Terrific tasters Sugar cubes	Egg strength, *Pollution Survey Electrical conductors, String phones Aquadynamics, Marble run Bridge engineers, Catapults Teeth Dunking biscuits, *Forensic powders Cleaning coins	Wind powered vehicle, *Dirty water filter Solar system research, Seed dispersal survey Invertebrate research *Outdoor keys, *Eco Action Digestion modelling Life cycle research Champion tapes

Planet Earth
Forces, Electricity & Waves
Biological Systems
Materials
*Topical science links

For searchable database of plans and examples go to:
https://pstt.org.uk/resources/curriculum-materials/assessment