

Thinking about assessment throughout a unit

Tips for getting started

- For pre assessment (to find out what children know already, what words they use confidently or if they can retrieve/recall from previous learning) you can use:
 - an annotated diagram or model to show their thinking before the learning e.g. digestive system
 - some word definitions which can be improved throughout a unit.
 - for KS1 it is also useful to do a class 'brainstorm' to gather thoughts and common vocabulary used prior to learning or
 - a KWL grid (joint/class one for KS1, individual for KS2) or concept map to find out children's prior knowledge and/or questions
 - Explorify www.explorify.uk also see further information below regarding this free resource. 'Have You ever...' and the 'Odd One Out' are good pre assessment activities from Explorify.
 - Explore, Engage, Extend for KS2 <https://pstt.org.uk/resources/resources-available-through-tts/explore-engage-extend> (This is a paid for resource)
 - other alternative strategies can be used, these are just a few to get you started. Our 'Sticky learning' course explains these and others too.

The key with pre-assessment is to identify what the children are struggling to communicate re their understanding or where there are misconceptions and then adapt planning to address these throughout the unit. So often pre-assessments identify misconceptions and incorrect use of vocabulary, but these are then not addressed throughout the unit. Aim to avoid this in your setting.

- use www.planassessment.com 'Examples of Work' (free resource) for each unit to support teachers in making a judgement against age related expectations. Compared with the example outcomes, would you judge your own pupils to be 'on track'? If teachers use these 'Examples' of work to support their planning, they will become more confident about what ARE might look like and can replicate some of the great strategies exemplified for evidencing learning at ARE.
- www.planassessment.com 'Knowledge Matrices' (free resource) – encourage teachers to use the 'Possible evidence' columns for the key knowledge *and* the range of enquiries in the Knowledge Matrices to give them the important aspects of a unit to 'check back on understanding'. Can the children genuinely talk about (and then write about) the concept with some **confidence and accuracy** using **their own words** alongside the **scientific vocabulary** from the unit? Ofsted often use 'Pupil Interviews' to listen to children talking about their learning - teachers can incorporate this into their teaching and 'check back' throughout a topic to see if children can do this confidently when talking about the learning/concepts.
- Using Explorify www.explorify.uk (FREE national resource) can help to provide different contexts and activities (10-15 mins of a lesson) to support pupil discussion and to see how children communicate their understanding. They can talk first and sometimes write their responses (as you progress through a unit) as a 'check back' / recap. Start with x1 Explorify activity per unit then build this up to several different ones **throughout** each unit to support regular AfL. Tweak/adapt future lessons to help pupils improve - often it is the vocabulary that needs developing/modelling/supporting further.
 - 'Odd One Out' from Explorify would be a good starting point for all teachers. Explorify covers all year groups and topics and is FREE so is easy to implement across school. It encourages pupils to talk about their understanding and use relevant vocabulary verbally to rehearse or consolidate learning. Try 2 or 3 different OOs during a unit to see how children's understanding and vocab is applied to the contexts.
 - 'Have You Ever...' is a useful Explorify strategy for finding out what children know and understand at the beginning of a unit. They help to link a concept to a child's everyday experiences and can introduce it in a way that makes sense to their young minds.

- Explorify 'What if...?' scenarios answered with a PMI (Plus, Minus, Interesting) are great for assessment towards the end of a unit - can the children apply their learning to the fictitious context in the 'What if...?' scenario? In KS1 this might be done in discussion groups or as a class.
- For an end of unit assessment, you can also use (where appropriate) the strategy 'Create/Invent/Design' - this encourages children to design their own version of something where they apply their learning in a different context. Can they label features, uses/jobs, etc.? e.g. design a clay model of the digestive system labelling the important features and their role in digestion; create a balanced, nutritious menu for a.....; invent your own minibeast labelling it's features; design your own animal - where does it live, how does it protect itself from predators, what special features does it have that help it survive in a particular habitat?; design an alien for a story book - it must have 3 features the same as a human and 3 that are different to a human - label its body parts; create a new plant - what features does it have? How do these help it survive/grow? How is it pollinated? What kinds of seeds does it produce/ how are they dispersed? etc.
- Ask children to share what they have learned about in a unit and present this to another audience e.g. as a poster, powerpoint, assembly, song, factsheet, concept map, etc. The children take what they know and reformat that information into an outcome for a particular audience. This helps to embed learning but can also be used to see how confident pupils are with vocabulary and understanding of key concepts.
- Using quizzes within and at the end of a unit can also help with recalling key vocabulary and learning. For example, older children can create their own quizzes for others in the class deciding the 5 (or so) most important things to ask about the unit; Quiz, Quiz Trade quizzes; Loop card games (search for these in STEM learning www.stem.org.uk or on TES website); e.g <https://www.educationquizzes.com/ks2/science/> (KS1 available too) NB: When using ready-made, online quizzes ensure you select only the questions which focus on the key learning in each unit to avoid the teaching going 'off track' from the essential focus.
- Focused Skills Assessment - TAPS from PSTT 'Focused Assessments' (see our Working Scientifically CPD for more support on this). <https://pstt.org.uk/unique-resources/taps/> These FREE focused assessments provide teachers with a lesson plan for one of the main enquiries in their unit. The resource selects a skill to focus on and encourages children to record that skill rather than a whole investigation. This skill can then be assessed against ARE as it is the main focus of the lesson. The resource supports the teachers in making a judgement against ARE. Look online at the 'Focused Assessment Overview' (by searching guidance in the 'Type of resource' drop down menu) where you will find a short video explaining the resource.

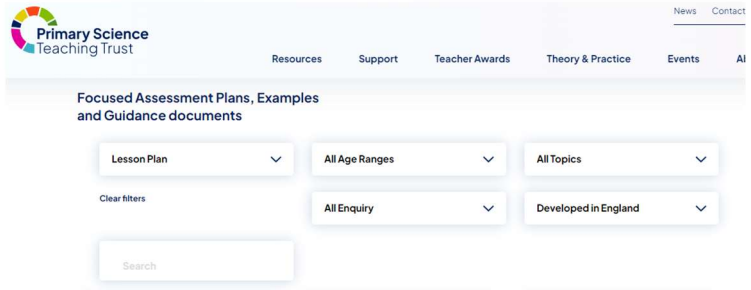
As an 'Essential Ingredient' in your science provision, encourage the teachers to do a minimum of ONE 'TAPS Focused Assessment for Skills' each unit. Some units have several to choose from which some teachers might like to dip into to support their planning but ensure ONE is done as a minimum. The TAPS FA lessons are linked very closely to the NC and so are not asking teachers to *do more* but use the activity for teaching **and** assessment. The FA task is usually done about two thirds or three quarters through a topic to ensure children have enough knowledge and skills to support their enquiry. The resource uses ARE for Science Skills from the NC2014 and so encourages teachers to become more confident with making judgements against these. They are very supportive and will help to save teachers' time in planning a key enquiry.

The resource provides an overview grid of opportunities and a set of 'lesson Plan' documents which the teachers can use to support their planning and encourage good practice for a focused WS assessment opportunity each topic. It also encourages teachers to think about which aspect of an investigation is most important and focus on this for the pupils' recording and then for assessment purposes. Using as part of teaching (not just an assessment) allows for teachers to support learning and move it on during a lesson and not just stop the learning to do an assessment task.

Outcomes from the tasks can then be used to support moderation and the TAPS examples can be used alongside pupils' work to help confirm teacher judgements. Encourage staff to bring ONE EXAMPLE of a TAPS outcome (for a child who is secure) to a staff meeting and have some professional dialogue with another teacher to discuss the outcome and if they agree it matches the expectations or not.

Overview of TAPS plans for Focused Assessment of Working Scientifically
(Any focus can be chosen for open-ended enquiries, these are only suggestions)

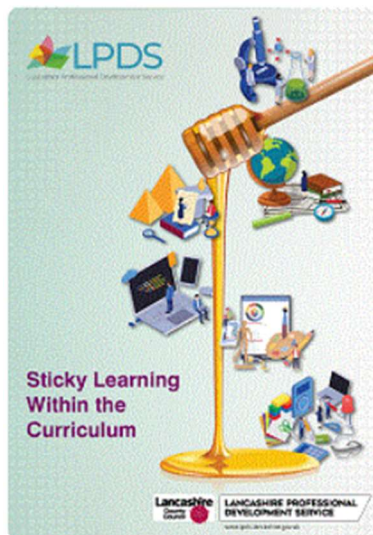
PLAN	DO	REVIEW
Ask/Obt 1 plan enquiry	Set up enquiry	Observe + Measure
K51 Lower enquiry, simple enquiry Ask simple Qs and encourage them that can be answered differently ways?	Plan simple tests	Observe closely using simple equipment.
Y1 TAPS Reflections, Transparency Simple enquiry What happens when...? What happens when...? What happens when...?	Planning and asking Simple enquiry Plan simple tests, using simple equipment	Plan equipment, Leaf task Student of colour Plant growth Woodlice habits
Y2 TAPS Animal home build Ask relevant questions and different types of scientific enquiries to answer them.	Set up simple practical enquiries Make predictions and/or observations Measure and record Record data in a variety of ways	Seasonal change Bridge material tests Woodlice habits Mammal food
Y3 TAPS Investigating skeletons Capacitor pinches Colour and pH	Share grid lines Measure lengths Measure volume	Measuring plants Plant care etc, test cross Fossils (eggs)
Y4 TAPS Combustion, Mixtures Use test results to make predictions to set up further enquiries, including measuring and controlling variables where necessary	Measure temperature Observe reactions	Measuring plants Plant care etc, test cross Fossils (eggs)
Y5 TAPS Sticky Learning, Sticky Absorbency Simple enquiry What happens when...? What happens when...? What happens when...?	Thermal reaction tapes Colour change Human heart rate	Human growth survey Sieve sieving Seed dispersal
Y6 TAPS Bubbles, Light Qs Q - Why? Light, Power sampling Transverse	Human heart rate Seed dispersal Transverse	Light colour Sieve sieving, Sieve flip Seed dispersal Long jump test, Shadow test Carnivorous plants Blood clotting



The screenshot shows the Primary Science Teaching Trust website interface. A search filter is applied to 'Focused Assessment Plans, Examples and Guidance documents'. The filter results are: Lesson Plan (dropdown), All Age Ranges (dropdown), All Topics (dropdown), Clear filters, All Enquiry (dropdown), and Developed in England (dropdown). A search bar is visible at the bottom.

The 'Sticky Learning in Primary Science' course unpicks these ideas and strategies (except the TAPS details) and can be accessed as a full day course or as a twilight session.

Or the 'Sticky Learning Within the Curriculum' publication which has a chapter on primary science. This can be purchased here: <https://www.lancashire.gov.uk/lpds/publications/details/?id=1239>



The 'Primary Science Assessment and Moderation' half-day course looks at progression documents (K&CU and skills), The TAPS Focused Assessment resources and the TAPS Overview Pyramid. It considers how to use these to evaluating strengths and weaknesses in all aspects of assessment (formative and summative) and how to support staff in schools to make accurate judgements of pupil progress against age related expectations.

Visit <https://lpds.lancashire.gov.uk/courses.asp?subject=SCI> for details and dates