Teacher Assessment in Primary Science (TAPS)

Cambridge Primary Review

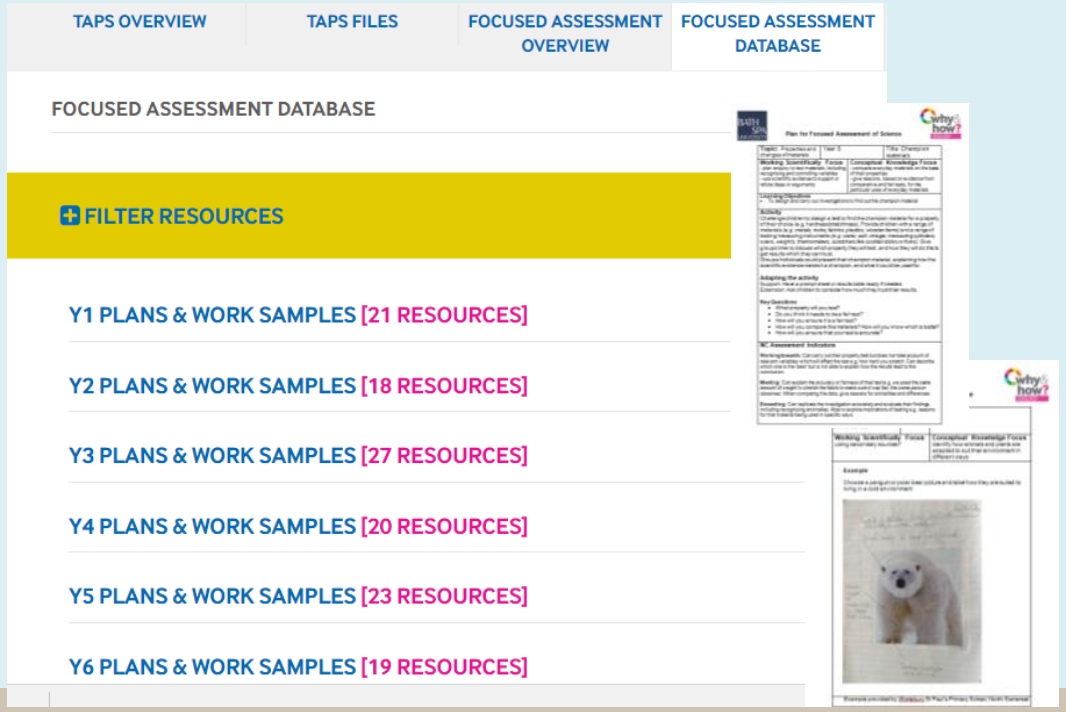
Nov 2016

Sarah Earle **@PriSciEarle** **s.earle@bathspa.ac.uk**

Aiming to develop support for a valid, reliable and manageable system of science assessment which will have a positive impact on children's learning.

TAPS headlines so far

- Reports summarising of approaches
- Pyramid self-evaluation tool with examples
- Focused assessment database of plans and work samples



BATH SPA UNIVERSITY

https://pstt.org.uk/resources/curriculum-materials/assessment

Teacher assessment of primary science

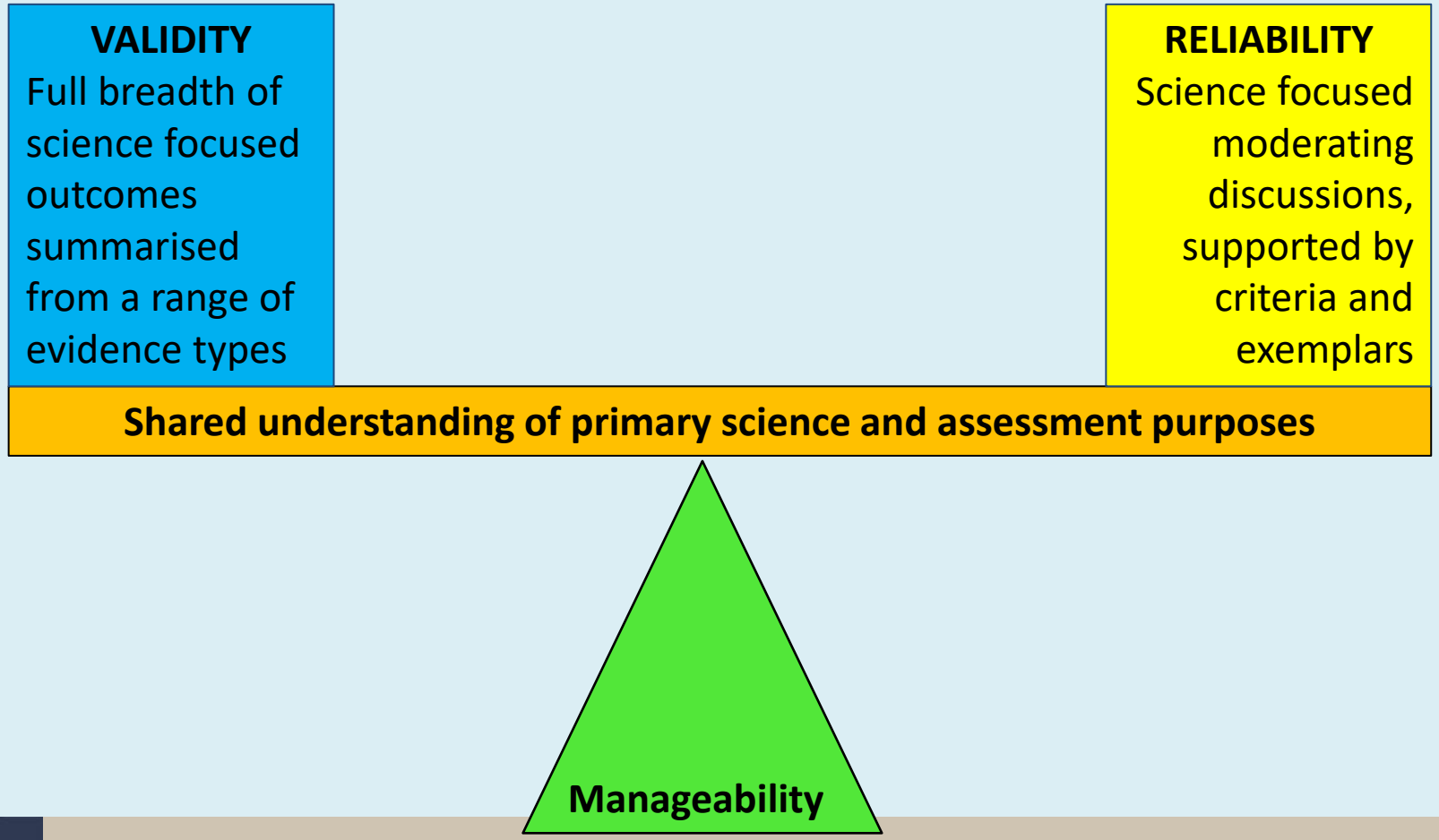
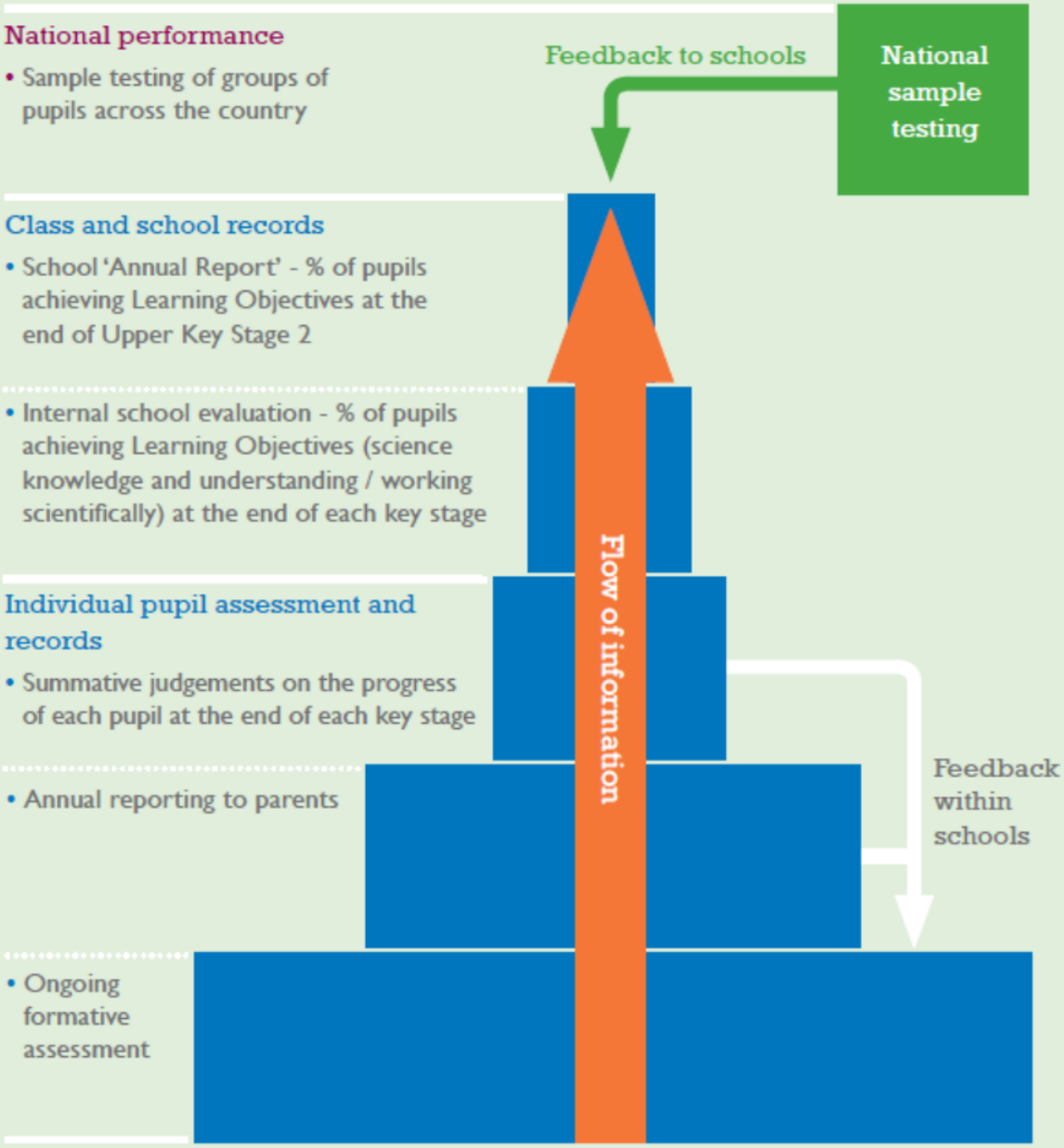


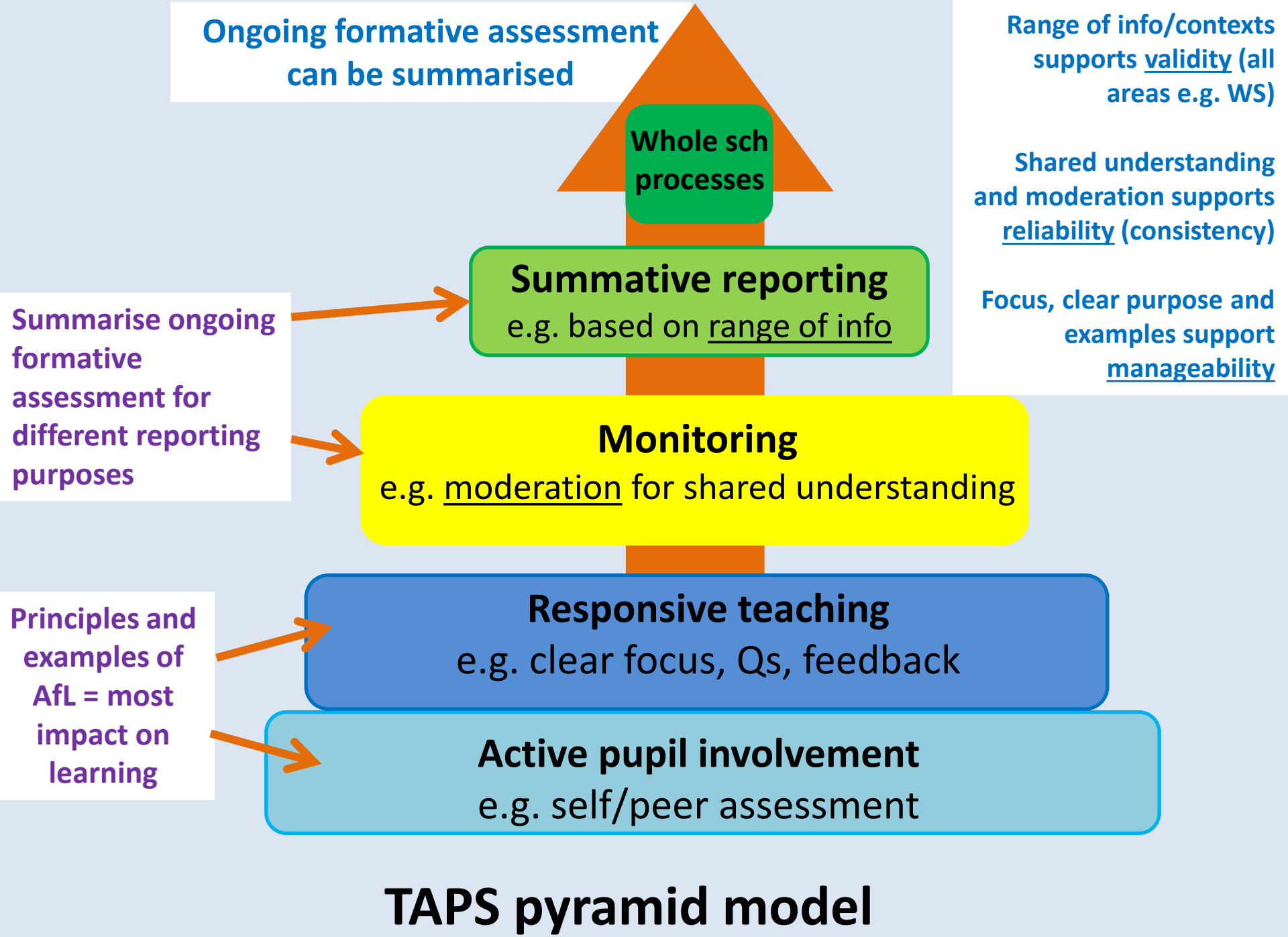
Figure 1: The flow of assessment data through the school



What does this look like in practice?

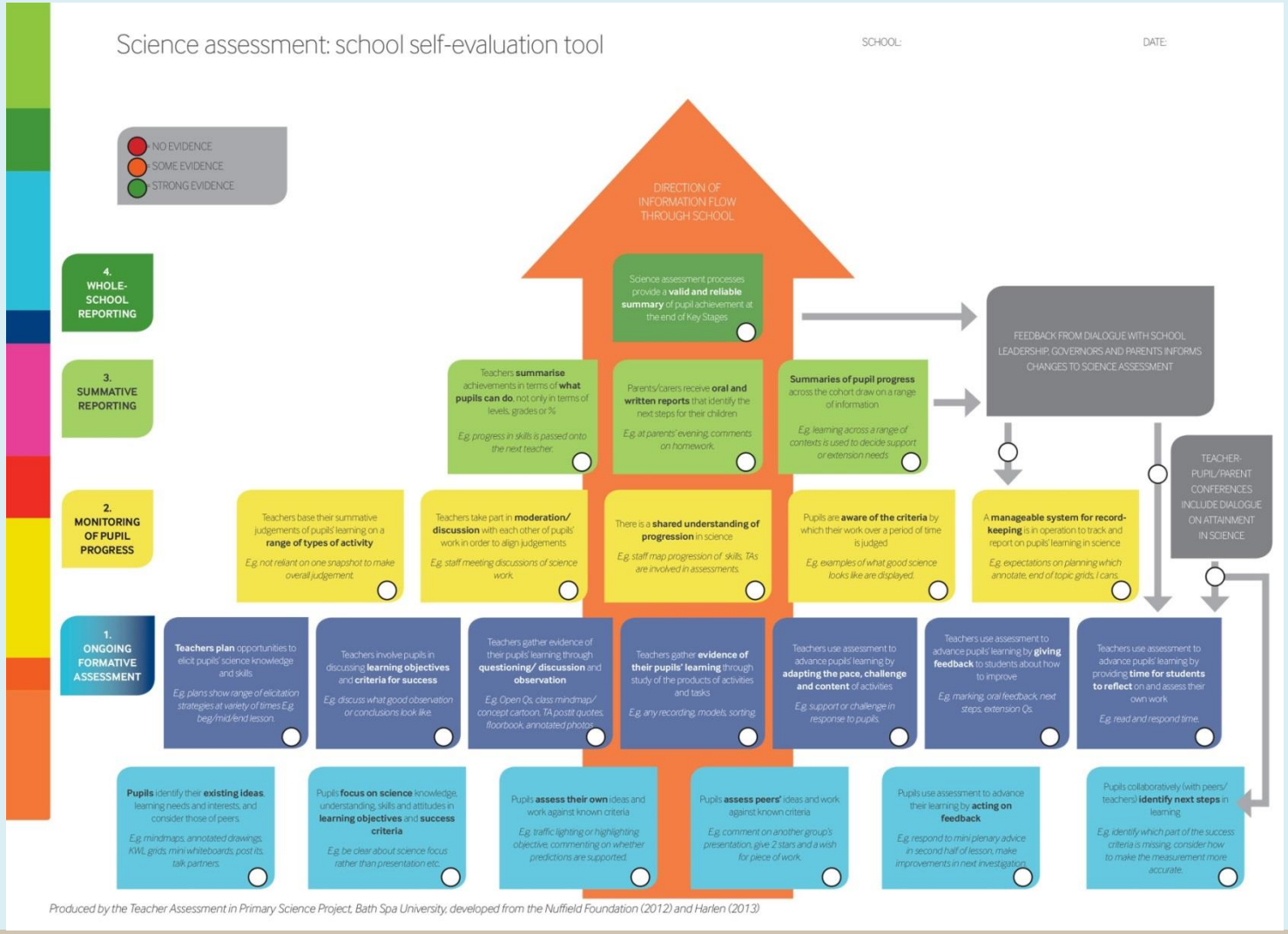
A Design-Based Research approach

Nuffield Foundation (2012) *Developing Policy, Principles and Practice in Primary School Science Assessment.* London: Nuffield Foundation



TAPS pyramid model

TAPS pyramid for school self-evaluation



BATH SPA UNIVERSITY

https://pstt.org.uk/resources/curriculum-materials/assessment

Pupils identify their **existing ideas**, learning needs and interests, and consider those of peers.

E.g. 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**

E.g. be clear about science focus rather than presentation etc.

Pupils **assess their own** ideas and work against known criteria

E.g. traffic lighting or highlighting objective, commenting on whether predictions are supported.

Pupils **assess peers'** ideas and work against known criteria

E.g. 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**

E.g. respond to mini plenary advice in second half of lesson, make improvements in next investigation.

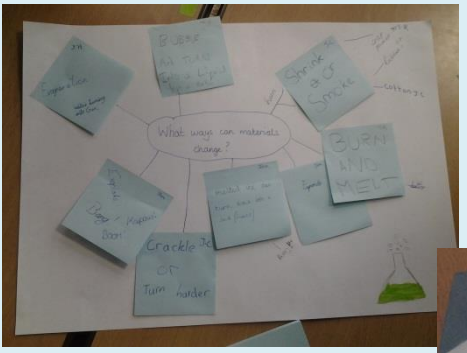
Pupils collaboratively (with peers/ teachers) **identify next steps** in learning

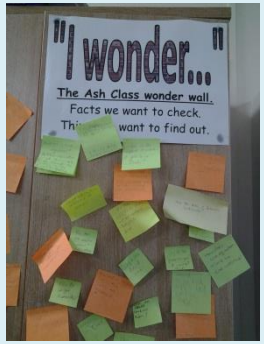
E.g. identify which part of the success criteria is missing, consider how to make the measurement more accurate.

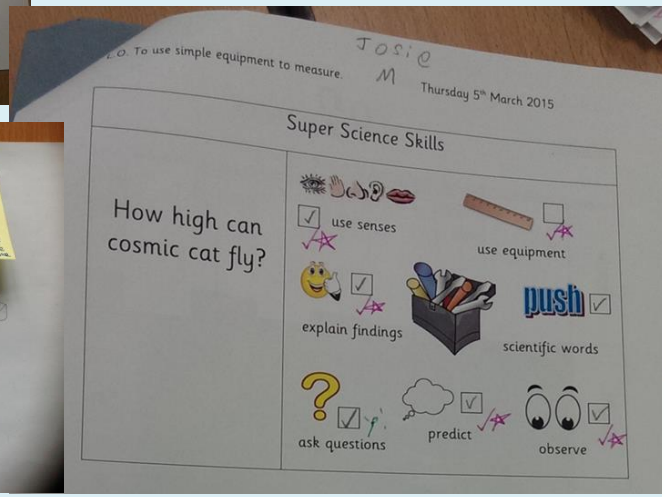
Pupils identify their existing ideas

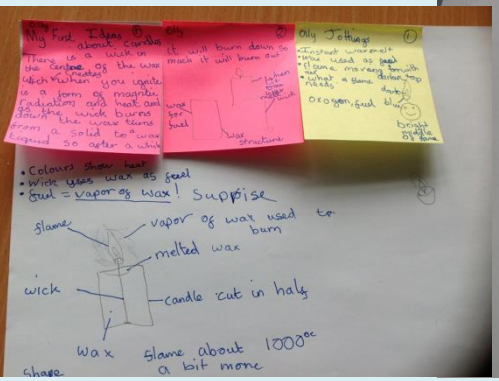
Pupils assess peers' ideas and work

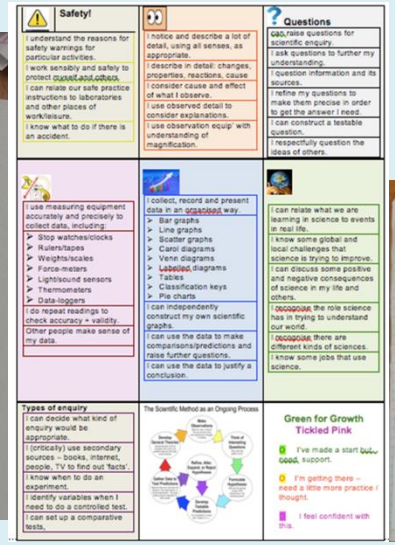
Pupils assess their own ideas

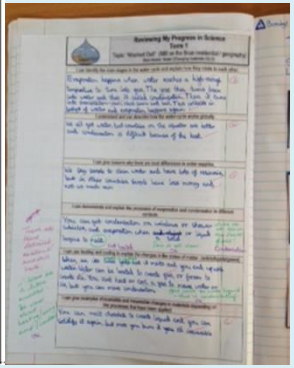






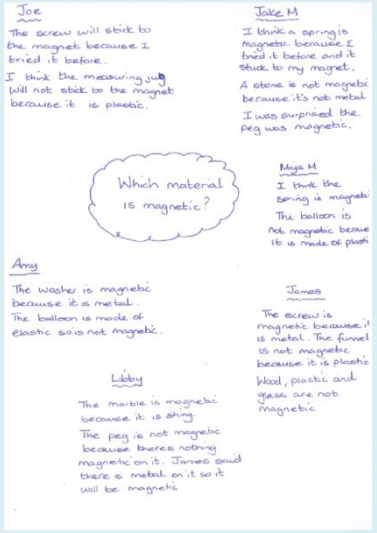


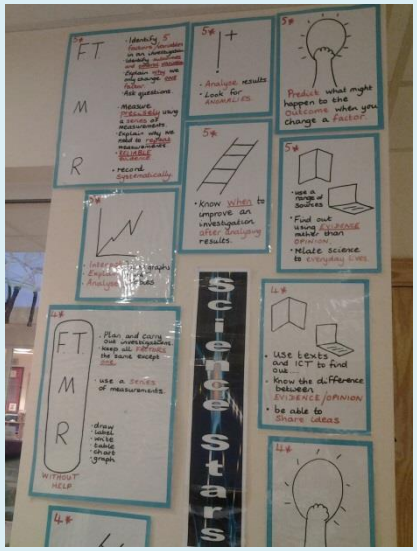




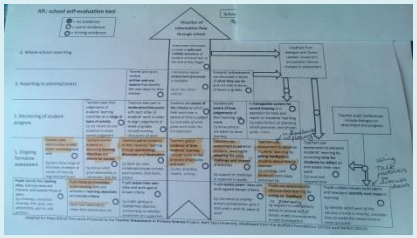
BATH SPA UNIVERSITY

Case study 1: Developing pupil active involvement





Teachers adapt pace and give pupils time to reflect



Teachers involve pupils in discussing criteria for success

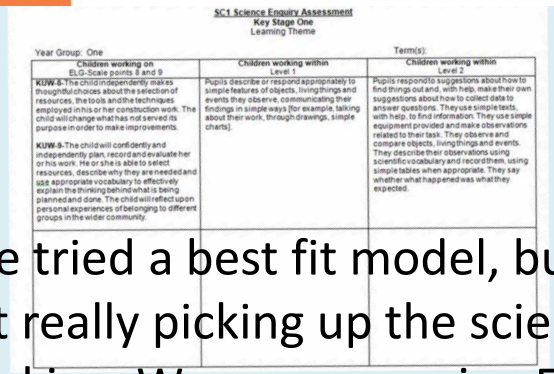
Teachers plan opportunities to elicit through discussion

BATH SPA UNIVERSITY

Case study 2: SLT look for responsive teaching

'We discussed assessments: we found tracking every child on every objective was unmanageable.'

Moderation discussions

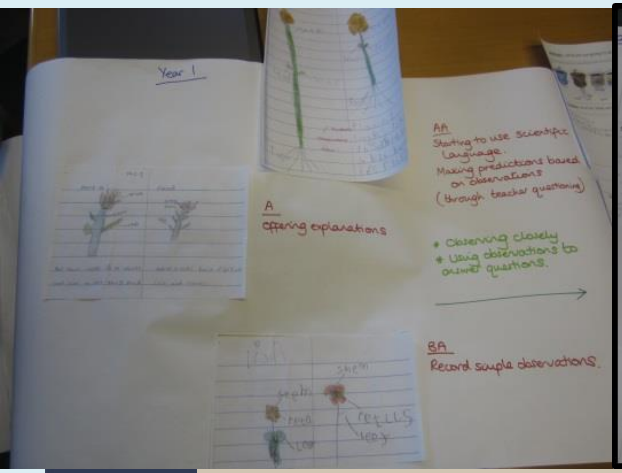


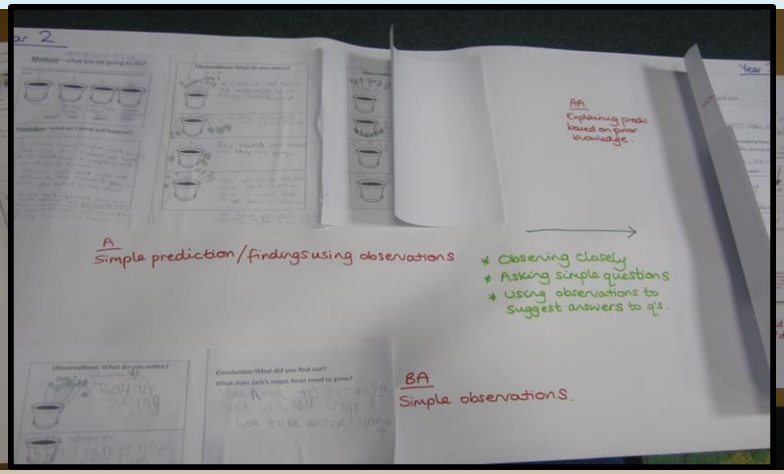
SC1 Science Enquiry Assessment
Key Stage One
Learning Theme

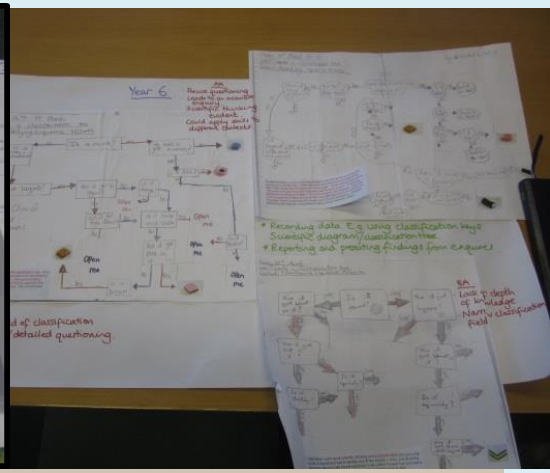
Year Group: One
Term(s):

Children working on ELG-Scale points 8 and 9	Children working within Level 1	Children working within Level 2
KUW-8-The child independently makes thoughtful choices about the selection of resources, the tools and the techniques employed in his or her construction work. The child will change what has not served its purpose in order to make improvements. KUW-9-The child will confidently and independently plan, record and evaluate his or her work. He or she is able to select resources, describe why they are needed and use appropriate vocabulary to effectively explain the thinking behind what is being planned and done. The child will reflect upon personal experiences of belonging to different groups in the wider community.	Pupils describe or respond appropriately to simple features of objects, living things and events they observe, communicating their findings in simple ways [for example, talking about their work, through drawings, simple charts].	Pupils responds to suggestions about how to find things out and, with help, make their own suggestions about how to collect data to answer questions. They use simple texts, with help, to find information. They use simple equipment provided and make observations related to their task. They observe and compare objects, living things and events. They describe their observations using scientific vocabulary and record them, using simple tables when appropriate. They say whether what happened was what they expected.

'We tried a best fit model, but it was not really picking up the scientific thinking. We are now using Focused Assessments to look closely at one area of science at a time.'







BATH SPA UNIVERSITY

Case study 3: Moderation to support consistency/reliability

Teachers base their summative judgements of pupils' learning on a **range of types of activity**

E.g. 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

E.g. staff meeting discussions of science work.

There is a **shared understanding of progression** in science

E.g. 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

E.g. 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

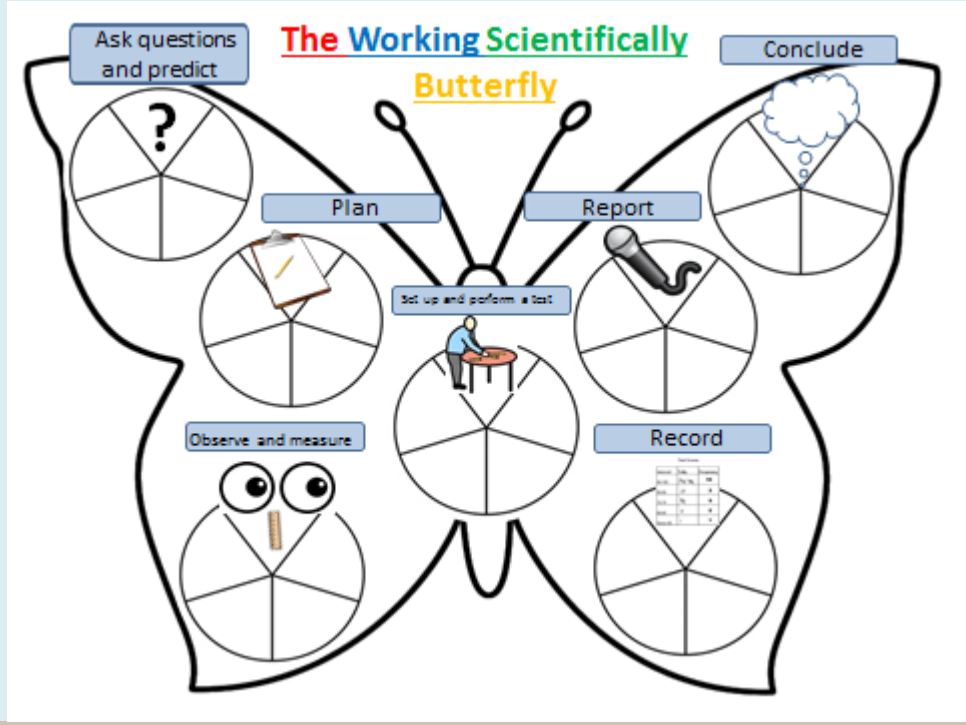
E.g. expectations on planning which annotate, end of topic grids, I cans.

Shared understanding of progression

Support for coverage and progression of Working Scientifically (NC objectives, *guidance to support progression in italics*) DRAFT3 S.Earle Dec2014

	Plan		Do			Review	
	Ask Qs + Predict	Plan enquiry	Set up enquiry	Observe + Measure	Sort + Record	Interpret + Report	Evaluate
Support for progn	*Provide time for pupils to explore.*	*Provide experiences of different enquiries*	*Provide resources which will enable comparisons.*	*Ask pupils to describe, draw and compare.*	*Prepare a range of formats to support pupils to record.*	*Create a science word bank with pupils*	*Remind pupils of their original questions.*
KS1 *Develop close obs*	Ask simple questions. Begin to predict.	Recognise that Qs can be answered in different ways.	Perform simple tests.	Observe closely, using simple equipment.	Identify and classify. Gather and record data to help in answering questions.	*Communicate what they found out using simple scientific language.*	Use their observations and ideas to suggest answers to questions.
Support for progn	*Provide question stems. Ask pupils to explain their predictions.*	*Provide opportunities for setting up different enquiries.*	*Ask pupils to make decisions in the setting up of investigations.*	*Provide access to a range of equipment. Discuss how to make increasingly accurate measurements.*	*Ask pupils to create their own tables and charts.*	*Support pupils to identify key findings, noting patterns and relationships.*	*Ask pupils to use their observations to make new predictions.*
Lower KS2 *Develop systematic approach*	Ask relevant questions. Make predictions using previous experience.	Use different types of scientific enquiries to answer questions.	Set up simple practical enquiries, comparative and fair tests.	Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.	Gather, record, classify and present data in a variety of ways to help in answering questions. Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.	Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. Identify differences, similarities or changes related to simple scientific ideas and processes.	Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Use straightforward scientific evidence to answer questions or to support their findings.
Support for progn	*Challenge pupils to ask a range of questions.*	*Provide a structure for group planning.*	*Ask pupils to identify variables.*	*Ask pupils to take repeat readings.*	*Ask pupils to create own tables, charts and, with support, line graphs.*	*Ask pupils to identify patterns and relationships in data.*	*Ask pupils to explain conclusions in terms of scientific concepts.*
Upper KS2 *Develop independence*	*Ask testable questions. Base predictions on scientific understanding.*	Plan different types of scientific enquiries.	Recognise and control variables where necessary.	Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate	Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.	Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.	Use test results to make predictions to set up further comparative and fair tests. Identify scientific evidence that has been used to support or refute ideas or arguments.
Support for progn	*Ask pupils to sort questions raised into types of enquiry.*	*Ask pupils to plan independently.*	*Ask pupils to identify which are key or cannot be controlled.*	*Ask pupils to explain the need for repeat readings.*	*Ask pupils to select how data is analysed eg averages and graph type.*	*Ask pupils to identify and suggest reasons for outlying results and spread of repeated measures.*	*Ask pupils to evaluate their own and others' evidence, recognising limitations.*

Types of enquiry: observing changes over time, noticing pattern, grouping and classifying, comparative and fair tests, using secondary sources.

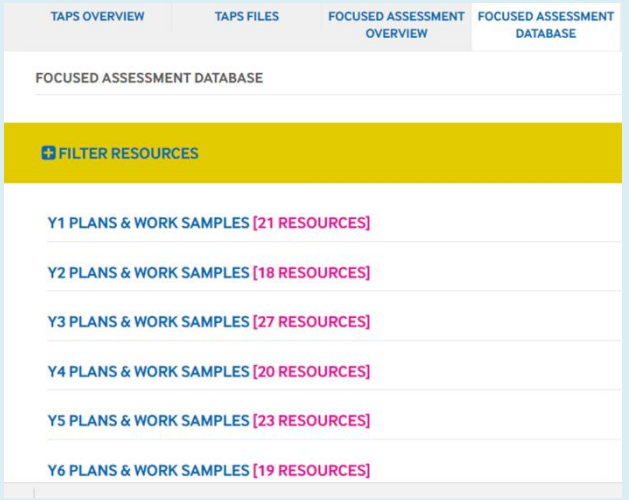


BATH SPA UNIVERSITY

Case study 4: Developing a shared understanding

We welcome feedback and further ideas

- Questions?
- Feedback?
- Please do share with your networks and invite them to help us to expand the database with their own egs.



s.earle@bathspa.ac.uk @PriSciEarle

BATH SPA UNIVERSITY

https://pstt.org.uk/resources/curriculum-materials/assessment