BRITISH COUNCIL

Strengthening Internal Assessments in Science

(CBSE–British Council Partnership)
Cascade Training
Session 2 - Observation



UNIVERSITY OF LINCOLN

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Welcome and purpose

- Welcome to this second session in the 'Strengthening Internal Assessment in Science' training programme.
- This session will provide a detailed consideration of the assessment of observation as a scientific skill.
- Before we start, we will recap session 1.

Definition of scientific observation

The systematic gathering of data about a natural phenomenon, using senses or tools, to identify patterns, anomalies, and build evidence for scientific explanations.

Activity 1: Watch the video together

Observing Scientifically

(5 mins)

Discussion groups and task

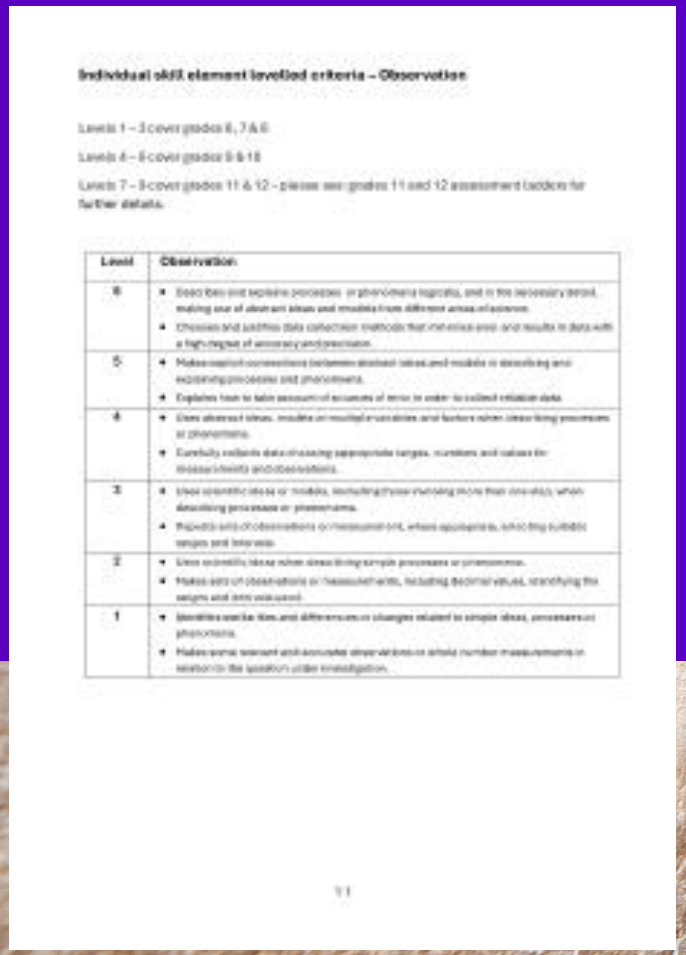
Discuss whether there are opportunities/expectations for pupils to ‘observe’ in your science textbooks.

Step 1: Using your textbooks and the observation progression ladder look for examples of the skill of observation that could be used tosupport your pupils’ scientific inquiry work.

Step 2: Share your thoughts and reflections on what you might need to do to support your pupils to better understand what it means to observe.

Step 3: note down any points to feed back.

Observation ladders and ‘I can’ statements



Individual skill element levelled criteria – Observation

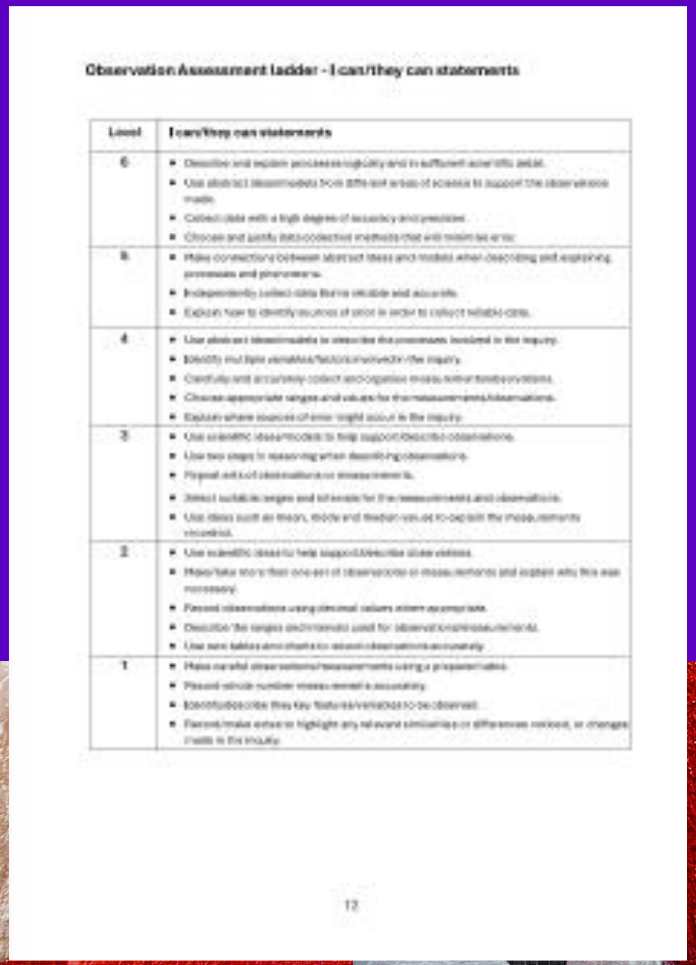
Levels 1 – 3 cover grades 6, 7 & 8

Levels 4 – 6 cover grades 9 & 10

Levels 7 – 9 cover grades 11 & 12 - please see grades 11 and 12 assessment ladders for further details.

Level	Observation
6	• Describes and explains processes or phenomena logically, and in the necessary detail, making use of abstract ideas and models from different areas of science. • Chooses and justifies data collection methods that minimise error and results in data with a high degree of accuracy and precision.
5	• Makes explicit connections between abstract ideas and models in describing and explaining processes and phenomena. • Explains how to take account of sources of error in order to collect reliable data.
4	• Uses abstract ideas, models or multiple variables and factors when describing processes or phenomena. • Carefully collects data choosing appropriate ranges, numbers and values for measurements and observations.
3	• Uses scientific ideas or models, including those overlooking more than one idea, when describing processes or phenomena. • Repeats sets of observations or measurements, where appropriate, selecting suitable ranges and intervals.
2	• Uses scientific ideas when describing simple processes or phenomena. • Makes sets of observations or measurements, including decimal values, identifying the ranges and units used.
1	• Identifies similarities and differences or changes related to simple ideas, processes or phenomena. • Makes some relevant and accurate observations or whole number measurements in relation to the question under investigation.

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Observation Assessment ladder - I can/they can statements

Level	I can/they can statements
6	• Describe and explain processes logically and in sufficient scientific detail. • Use abstract ideas/models from different areas of science to support the observations made. • Collect data with a high degree of accuracy and precision. • Choose and justify data collection methods that will minimise error.
5	• Make connections between abstract ideas and models when describing and explaining processes and phenomena. • Independently collect data that is reliable and accurate. • Explain how to identify sources of error in order to collect reliable data.
4	• Use abstract ideas/models to describe the processes involved in the inquiry. • Identify multiple variables/factors relevant to the inquiry. • Carefully and accurately collect and organise measurements/observations. • Choose appropriate ranges and values for the measurements/observations. • Explain where sources of error might occur in the inquiry.
3	• Use scientific ideas/models to help support/describe observations. • Use two steps in reasoning when describing observations. • Repeat sets of observations or measurements. • Select suitable ranges and intervals for the measurements and observations. • Use ideas such as mean, mode and median values to explain the measurements recorded.
2	• Use scientific ideas to help support/describe observations. • Make/take more than one set of observations or measurements and explain why this was necessary. • Record observations using decimal values where appropriate. • Describe the ranges and intervals used for observations/measurements. • Use simple tables and charts to record observations accurately.
1	• Make careful observations/measurements using a prepared table. • Record whole number measurements accurately. • Identify/describe the key features/variables to be observed. • Record/make simple observations/measurements. • Record/make simple observations to highlight any relevant similarities or differences noticed, or changes made in the inquiry.

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Activity 2: Observation by discipline

Observation as a scientific skill can look different depending on whether we are thinking about biology, chemistry of physics disciplines. We might use different senses for different purposes.

Can you think of any examples?

Discuss in your groups what you might focus on when assessing observation skills in different areas of science.

Note down the main points from your discussion.

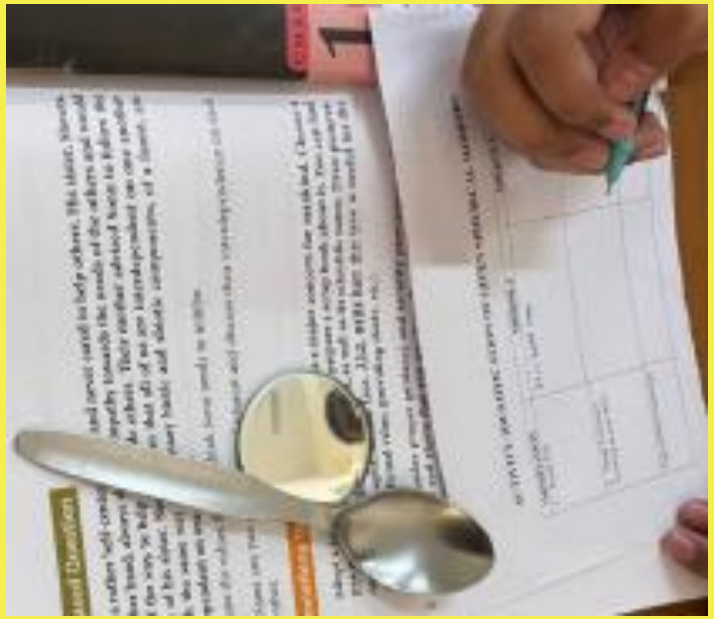
Assessment evidence

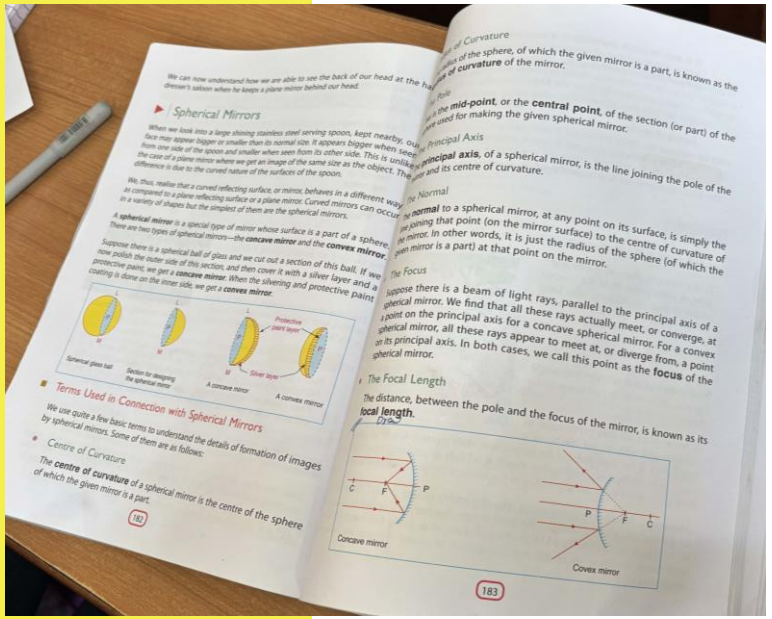
To have a rigorous and reliable assessment process we will need evidence that is strong enough to provide us with the information we need to determine which level a pupil is at. We will also need to decide what evidence we need to persuade us that a pupil has progressed from one level to the next.

The following slides show some examples of pupils' work for us to consider.



Observation	Mirror A	Mirror B
1. Touch Test(What does it feel like?)		
2. Image Formation (Looking at your face)		
Type of mirror identified		





Discussion

In groups, discuss the following two questions:

- When assessing observation skills what are the challenges that come to mind?
- How might you mitigate the barriers to progression?
- Note down the main points.

Feedback from the discussion activity

Please feed back your initial thoughts about the framework.

Key learning points from this session

We have:

1. Considered the skill of observation.
2. Been introduced to the assessment ladder and the key criteria to support assessment and progression of observation as a skill.
3. Related the skill of observation to your current textbooks and thought what other examples pupils could be introduced to.
4. Discussed the how the skill of observation might look in different areas of science.
5. Considered the actions you might take to support and develop this skill area in your classroom.

Reflection

Reflect on your current and developing practice:

Question 1: To what extent do you currently focus your pupils on the skill of observation in scientific inquiry/practical work?

Question 2: What else could you do to further develop your practice and help your pupils to make progress in this skill area?

Question 3: Which aspect of this session did you find most challenging and why?

Question 4: Which aspect of this session did you find the most useful?

Next step and activities ahead of Session 3

Before our next session, please watch the following videos Asking scientific questions (4 mins)Hypothesising and predicting (4 mins)

In Session 3 we will focus on questioning and hypothesising as scientific skill areas



Thank you

and we look forward to seeing you in the next session.

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