



# Edexcel A levels in Biology, Chemistry & Physics

## Assessing CPAC: where to look for evidence

At the end of their A level studies, each of your students is judged, by you, to be competent (or not), based on how well they have carried out practical work in the laboratory. In supporting your holistic judgement of your students' competence, you will need to have compiled evidence for their competence in each of the CPAC statements. This does not need to be very detailed – indeed, you have probably developed shorthand descriptions when assessing your students. As evidence for CPAC may come from different aspects of practical work, this document shows where you might best look for evidence. It can also be used when compiling Pen Portraits, which can also focus on where to look for evidence as well as what to look for.

Clearly some of the evidence will come from what you see your student doing in the laboratory and other evidence will come from the lab book. Do not forget that evidence might also result from a discussion with your student whilst they are doing an experiment.

In the majority of centres, students use a lab book to record what goes on in the lab and make contemporaneous records e.g. tables of readings. Lab books are also likely to contain any plans that have been written. Some centres use other methods of collating student practical work, but the key factor (indeed, an Ofqual requirement) is for student records to be contemporaneous, and not simply neat reports produced after the event.

Of course, you will want your students to be able to write formal lab reports (and these can go in the lab book), but for CPAC assessment purposes these are not a routine requirement; rather it is the work done in the lab at the time that is assessed.

Annotations in lab books will help you to make your final holistic judgement at the end of the course. These annotations need only be simple, such as “✓ 4b”. Where evidence was visual, this can be recorded as “✓ 2a – seen” at the top of the work. These annotations also provide simple feedback to your students.

For assessments that are made visually, without written evidence to support the decision, we would recommend the use of Pen Portraits, which enable these decisions to be made consistently across all students and all the assessing teachers. A Pen Portrait provides a simple description of the visual evidence required to meet the Pass standard.

Where the evidence is both visual and written you will probably need to combine both observations to be certain of competence. For example, with CPAC 2c: did they plan to keep a variable constant? (written); and did they take the right sort of actions in the lab? (visual).

A number of CPAC statements are best assessed if students write a full plan for a practical. With small classes, you could then ask students to carry out their own plan. More usually, students would then follow a plan or worksheet provided by you. In this case, you will know what apparatus to prepare and whether the students will be safe; and they can then be assessed for 1a as well.



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CPAC	Visual	Written	Full Plan	Notes
1a	✓			Minimal prompting is the key here. It's not about proficiency with apparatus: but can they follow a method to collect some readings.
2a	✓			The same as 1a, but also the apparatus needs to be correctly used to collect readings that make sense. It helps if some of the assessments are of investigative activities.
2b	✓			Need not be agonisingly methodical but the work should require adjustments or tweaks to the apparatus. Not all experiments lend themselves to this.
2c	✓	✓	✓	If a variable cannot actually be controlled but might have an effect e.g. room temperature, then measuring before and after to detect any change is sufficient. There must be evidence of an approach being planned – look in the lab book. Ideally, approaches will be safe – but this is more likely to fall in CPAC 3.
2d		✓	✓	Selection of apparatus and measurement strategies is best evidenced through a plan. Could be handled as a short exercise at the start of a lesson – see <b>Notes</b> below the table.
3a		✓	✓	Write a risk assessment
3b	✓			Work to a risk assessment, keeping the apparatus safe as well as themselves.
4a	✓	✓		More of a holistic assessment than 2a and, particularly, looking for confidence in approach. In terms of whether apparatus has been used properly and effectively, then a results table or graph will help you to judge for accuracy.
4b		✓		Records an appropriate range and number of readings, at the time of reading, in a pre-drawn table with headings, unit and appropriate SF. What constitutes “appropriate” will vary between practicals – but the Pen Portrait should indicate what this is.
5a		✓		Note there are three element to see here i.e. process data (calculator), research (conclusion) and report findings (graph). All are needed, but not necessarily in the same practical activity.
5b		✓		Cites properly e.g. including date accessed for a website. As for 5a, note that there should be evidence for planning <b>and</b> conclusions.

## Planning exercises for 2d

A simple way to assess CPAC 2d is to put some apparatus on a bench and ask students to write a plan which uses some or all of it to carry out some practical work. This is quick (20 minutes) and easy to assess. It covers both elements of 2d and can be included in the student book on completion.

If you want to assess the strands of CPAC 2d separately, then putting out only the required apparatus and asking for a plan could be used to assess a measurement strategy; or putting out a range of apparatus and asking students to choose what they would need for a particular task (without writing a full plan) could be used to assess the idea of selecting apparatus (as would simply asking students to write an equipment list for a practical activity with no visual prompt).