

Questions related to internal assessment: Classroom practice

23. How is the internal assessment different to the extended essay? Isn't the new IA simply a mini extended essay?

An extended essay in the sciences is optional, whereas the IA is compulsory for all group 4 students. The EE is under review with a new guide being published in 2016 for first examination in 2018.

Although there is some overlap in the nature of the tasks, the assessment criteria for the two demonstrate the differences between them;

- The IA is more likely to focus on the syllabus content whereas the EE could explore aspects of the subject not covered in the syllabus;
- The IA must include data collection and analysis (from hands on experiments, databases, simulations or modelling) and cannot purely be a literature review;
- The EE must construct a theoretical framework for the underlying subject content of the chosen topic whereas the IA focuses on the application of the scientific method to a problem of interest and will only include some background information;
- The EE explicitly assesses the students' ability to analyse and evaluate scientific arguments.

25. Do students need to come up with their own original idea or are they able to choose something similar to others in the class or topics which were chosen in previous years?

Students should be coming up with their own ideas for their IA although some guidance and support can be provided. In a large class it is possible there is some overlap of topics provided there is an individual research question. Students may choose a topic which has been carried out in previous years but should use their own research question and hence their own approach in designing the experiment, collecting and analysing data.

It is unlikely that all projects chosen will be totally original, as long as the idea is new to the student and has not been plagiarised. Schools may choose to use software such as "Turnitin" to check that students are not submitting work that is not their own.

<p>28. If in biology a class experiment looks at the effect of temperature on enzymes can a student choose an investigation about the effect of pH or substrate concentration on the enzyme?</p>	<p>There is nothing to prevent this happening, but teachers will need to ensure that the methodology used is not simply an exact copy of something that has already been done in the class activity.</p>
<p>29. Can HL students do an investigation based on core topics from the guide?</p>	<p>Yes. Similarly a SL student may wish to carry out an investigation from the HL part of the course.</p>
<p>30. What is the nature of the research question? Would it be in the form of the current IA with dependent and independent variables?</p>	<p>In many cases it will be entirely appropriate for the student to carry out a manipulated laboratory experiment where variables are measured and controlled. However, there are some types of investigation, where this approach is not necessary or desirable. The new criteria allow for success in these types of investigations.</p>
<p>31. Is it required that students collect quantitative data for the IA?</p>	<p>In physics most of the data collected will be quantitative so that graphs can be produced and a relationship between the variables developed. In general, quantitative data in science enables the student to analyse findings and reach conclusions with a greater degree of certainty, but there will be circumstances where qualitative data will have high validity. The new criteria allow for credit be given when data appropriate to the research question are collected.</p>
<p>32. One aspect of assessment objective 3 requires students to formulate hypotheses, but the IA criteria do not require this. How will this objective be assessed?</p>	<p>There is no IA criterion which specifically asks for a hypothesis, but on some occasions it might be appropriate. Note that this aspect of objective 3 may be tested in the external examinations.</p>
<p>33. If a student uses data logging and collects lots of raw data how can this fit into the 12 page limit? Can students use an appendix for excess raw data in this case?</p>	<p>There is a 12 page limit for the internal assessment report and an appendix must not be included. If there is a large amount of data collected in digital form then a representative sample could be shown. Graphs can also be used to highlight patterns in large amounts of data that have been collected in place of a table.</p>
<p>34. If a student uses a database for the IA how can they be assessed for methodology and analysis where he/she has to collect the raw data?</p>	<p>As part of the methodology, students will need to justify the selection of the database they used in terms of reliability of data and may need to look at a few alternative sources to determine this. They will also be expected to justify any method of sampling data from the database. The criteria are flexible enough to allow for a range of different approaches and as the report is marked holistically not all aspects of the criteria are relevant in all cases.</p>

35. What, if any, is the penalty if the IA goes beyond 12 pages?	There is a 12 page limit but there is no automatic penalty for going over. However, the communication criterion specifies the report must be concise to obtain the highest grades.
36. Can students work together when they do the experiments for the IA?	There may be cases where an extra pair of hands is required and students should be encouraged to help each other out. It would not be acceptable for both students to use the same data as part of their individual investigations.
37. Will the students be penalised for only using basic equipment in the IA due to the school restrictions on apparatus?	No. Some of the best experiments can be carried out with simple familiar equipment as this allows for a greater personal engagement with the research question. With more complex equipment students do not always understand how the data is generated and they may be distracted from the fundamental purpose of their investigation. This is not to be confused with a simple design: it is expected that the level of sophistication will be commensurate with diploma level science.
38. What happens if no data is generated during the IA investigation?	The criteria have been designed to assess the process of devising and carrying out an investigation, and then analysing and evaluating the data. The 10 hour student investigation is in fact unlikely to reveal new and definitive knowledge, and therefore, in most cases, unexpected or limited results should not have a negative impact on the student. An investigation which generated no data at all would create some impact on the student's achievement, and for this reason it is important that a student-teacher consultation takes place during the planning phase in order to avoid this possibility.
39. Is it allowed to use university equipment for all (or part) of the internal assessment?	Although this is not explicitly forbidden, this would not be recommended as the investigation should be devised and carried out by the student, based on their experience of the DP curriculum.
40. Are there any guidelines for the format of the IA (font size etc.)?	There are no formal guidelines with regard to font size or style, margins or paper size. Teachers and students are expected to use common sense and follow the style that they normally adopt in school. This would usually mean a font size of between 10 and 12 pt, and a style that can clearly be read by teachers and moderators. The student does not need to include a cover page because the form 4/ICCS exists to provide all the relevant information. In addition, no abstract, nor table of contents is required.
41. Is there any specific format for the IA?	As an international organisation we appreciate that there are many different ways to produce good reports and therefore we do not insist that any one style is used. Moderators will read the whole report when reviewing the teacher's mark. Nevertheless, the student should aim to write a well structured report where the information flows in a logical sequence in order to score highly on the communication criterion.

<p>42. What sort of analysis/statistics is expected from students doing a database project for their IA?</p>	<p>Data analysis is for the purpose of discovering trends in the data. Sometimes these trends are not clear or conclusive from a graph alone and statistics can be used to shed more light on the significance of the trend and therefore the data. If a student uses statistical analysis, the test chosen should be suitable for data being analysed.</p>
<p>43. In the evaluation section of the assessment criteria, does the “extension” have to relate to the specific investigation or can it include further investigations involving a new research question?</p>	<p>In some cases there will be sufficient discussion of how to improve the actual investigation to generate additional data which would make a conclusion more reliable, while in others questions may have been raised which can suggest further related investigations which could be carried out. An extension would not involve the creation of an entirely new research question.</p>
<p>44. Does the communication criterion mean that students should be presenting their IA through a variety of media?</p>	<p>No. The communication criterion is designed to assess skills in creating a logical, clear and well structured written report.</p>
<p>45. What if students want to use the same IA for other science subjects, or in their extended essay?</p>	<p>This is not permitted.</p>
<p>46. Is peer review of a draft copy of the internal assessment allowed?</p>	<p>This is not permitted since the IA is an individual investigation and a peer review implies collaboration.</p>