

DP ESS

Frequently Asked Questions

Environmental Systems and Societies (ESS) - Frequently Asked Questions.

This document does not repeat information which has already been given in other documents (guide, teacher support material, specimen papers).

In this document, reference to the “old guide” means the version of the guide published “for first examinations 2010” and reference to the current or new guide refers to the one published for “first examinations 2017”.

If you still have questions then contact IB Answers.

Questions related to the syllabus	
1. From the new guide, how do teachers know the depth to which the content should be taught?	Look at the Applications and skills section of each syllabus to see examples. The Guidance section also helps to set the limits and constraints on the depth of teaching. The amount of time allocated to each subtopic gives some ideas for how much should be covered and the specimen papers also give an indication of this.
2. Why have the assessment statements been replaced with a new format?	The change reflects the idea that the guide is a document to support teaching and learning, and not just assessment. This gives teachers more control over what is taught and can develop a programme of study that better meets the needs of their students.
3. Where is the changes document to compare the old guide to the current guide?	It can be found in the Teacher Support Material (TSM) section of the ESS webpage.
4. Is the nature of science (NOS), which is present in the new group 4 guides, included in ESS?	No. ESS is an interdisciplinary subject, spanning groups 3 and 4. It does not necessarily follow the common elements of the group 4 subjects and NOS is not part of this course.

<p>5. What is the reason for including Big Questions in the guide? How do these fit into the teaching of the ESS syllabus content?</p>	<p>The Big Questions are found in the “Approaches to teaching and learning in ESS” section of the guide, and are also linked to each topic in the syllabus content. These questions are designed to encourage teachers and students to think holistically about the ESS course, since there is no doubt that adopting this approach will foster deeper understanding of complex issues involved. There is no prescribed way to deliver the big questions. Teachers may choose to develop a conceptual approach to delivery of the curriculum using the big questions as a guide for developing transfer goals, or alternatively the questions could be used for reflection debates or assignments once several topics have been covered. Teachers should note that these are examples of big questions and this is not an exhaustive list.</p>
<p>6. Are there going to be questions on international-mindedness in the external examinations?</p>	<p>International-mindedness should be integrated into lessons when appropriate and not be seen as a stand-alone theme. Questions will not explicitly be asked on the international mindedness themes addressed in the guide, but the questions will be written to reflect the international nature of the subject.</p>
<p>7. Will examination questions assess the TOK links in the guide?</p>	<p>TOK has its own assessment criteria and these are addressed through the TOK essay and presentation. TOK will not be assessed in the ESS examinations.</p>
<p>8. What is the difference between the left- and right- hand side of the syllabus pages of the guide?</p>	<p>The left-hand side of the syllabus is used to guide a teacher to develop their scheme of work and to provide information on what could be assessed in the external examinations.</p> <p>The right-hand side gives further guidance and adds the IB dimension to the teaching through highlighting links to other subjects or areas of interest outside of the classroom and providing some prompts for international mindedness and TOK discussion within the classroom.</p>
<p>Questions related to practical work</p>	
<p>9. Is there a list of prescribed practicals?</p>	<p>No. ESS does not have any prescribed practicals, although suggestions for practical activities can be found in the guidance section of some sub-topics. Note that these are suggestions and are not mandatory.</p>
<p>10. When must the internal assessments be done?</p>	<p>This is an internal decision for every school. Each will need to do some backward planning (within a subject and across other Diploma programme subjects) to ensure that students have sufficient time to plan and carry out the internal assessment as well as to provide the written report.</p> <p>There is a document in the TSM offering guidance for planning and carrying out the work for the IA.</p>
<p>11. Are data loggers required for the IA?</p>	<p>No. Data logging devices may be used in assessed and other investigations where appropriate, and they can greatly enhance the possibilities for data collection in ESS studies in the laboratory and in the field, but it is not mandatory. Note that data logging software is available for mobile devices and for some graphing calculators, so a school that does not</p>

	<p>have traditional data loggers can use these. The above guidance also applies to graph plotting software, spreadsheets, databases and simulations.</p>
<p>12. Can you provide some more details of what is expected from the use of a database for the internal assessment?</p>	<p>If a database is used, students should be able to access and extract information from a database to obtain data which could be used for further analysis. Students are not expected to create their own database.</p>
<p>13. Can we use the old tick-box rubrics (Planning, Data collection and processing, and discussion, evaluation and conclusion) for training the students?</p>	<p>It would be unwise to use rubrics designed for old criteria. It will be beneficial if students are exposed to the new criteria at an early stage with practical work scaffolded in such a way to introduce the students to the new criteria. This will give them opportunities to practice and master the necessary skills before they are formally assessed as part of the IA.</p>
<p>14. Is it mandatory that students write lab reports for each investigation carried out?</p>	<p>There is no need to ask students to write reports for each experiment. Some practical activities may be used to develop skills related to the IA while others can be used for discussion to enhance and strengthen student understanding of certain concepts. The only grades which need to be recorded for the IB are from the final piece of work submitted for their IA.</p>
<p>15. Do ESS students have to take part in the group 4 project?</p>	<p>The group 4 project is not required for ESS and so only those students who study another group 4 science or design technology are obliged to take part. However, schools may decide to include ESS students in the group 4 project as it is not forbidden and can provide an invaluable experience in collaborative and creative learning.</p>
<p>16. If my class take part in the group 4 project, will it count towards the 30 hours of practical work?</p>	<p>Yes, it can be counted and included on the ES&S/PSOW. However, teachers should consider the implications for developing ESS-specific practical skills if the students only have 30 hours in total for their practical work.</p>

Questions related to internal assessment: Classroom practice	
<p>17. How is the internal assessment different to the extended essay? Isn't the new IA simply a mini extended essay?</p>	<p>An extended essay in ESS is optional, whereas the IA is compulsory for all ESS students. The EE is under review with a new guide being published in 2016 for first examination in 2018.</p> <p>Although there is some overlap in the nature of the tasks, the assessment criteria for the two demonstrate the differences between them;</p> <ul style="list-style-type: none"> • 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 or fieldwork, databases, simulations or modelling, surveys or opinion polls) 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 use of an appropriately chosen methodology to address an environmental issue or problem of interest, and to use the findings to suggest a solution to, or application for the issue;
<p>18. Is the ESS IA different to the IA for chemistry, physics and biology?</p>	<p>Yes. Although both involve a 10 hour individual investigation, the nature of the tasks is different. In ESS, the students must start with a broad environmental issue and use this to develop a focussed research question that they can investigate practically in the school context. The analysed results of this study should inform the initial environmental issue by suggesting solutions or offering applications. The criteria for ESS reflect this structure and are different from those in the group 4 sciences.</p>
<p>19. The new IA is listed as a 10 hour component. What activities count toward these 10 hours?</p>	<p>There is guidance on this in the TSM.</p>
<p>20. 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</p>	<p>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 environmental issues 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.</p>

chosen in previous years?	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.
21. Can students carry out an IA using data collected in surveys and opinion polls?	Yes. The criteria have been designed to allow for all types of investigation that are appropriate for an interdisciplinary course. A traditional scientific approach is not always necessary, but whichever approach is adopted, the methodology should be appropriate to the research question and be properly justified.
22. How much help can the teacher provide to the students in the IA investigation? What type of feedback can be given?	There is guidance on this in the guide and the TSM.
23. Can the IA activity be carried out as part of an ecology fieldtrip?	Because not all students will chose an investigation that is based on an ecological study, this is unlikely. The fieldtrip is more likely to be of importance for addressing the knowledge and understanding for topic 2.5 and for giving the students the opportunity for developing a range of skills that they may later employ in their IA.
24. What is the nature of the research question? Would it be in the form of the current IA with dependent and independent variables?	In some cases it will be entirely appropriate for the student to carry out a manipulated laboratory or field experiment where variables are measured and controlled. However, there are many types of investigation, particularly those where the approach is more “group 3” than “group 4”, where a manipulated lab or field experiment is not necessary or desirable. The new criteria have been designed to allow for success in these types of investigations.
25. Is it required that students collect quantitative data for the IA?	In general, quantitative data 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.
26. Are students expected to provide a hypothesis for their research question?	There is no IA criterion which specifically asks for a hypothesis, but on some occasions it might be appropriate.
27. If a student uses data logging and collects lots of raw data how can this fit into the word limit? 28. Can students use an appendix for excess raw data in this case?	There is a 1500-2250 word limit for the internal assessment report, but tabulated numerical data are not included in this limit. Nevertheless If there is a large amount of data collected in digital form then a representative sample could be shown instead as this might improve the conciseness of the report. An appendix must not be included.

<p>29. 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>
<p>30. What, if any, is the penalty if the IA goes beyond 2250 words?</p>	<p>The teacher/marker should stop reading the report when the word limit has been reached. If the student goes over the limit, they are likely to lose marks for aspects of the assessment criteria not addressed before the word limit was reached, and also risk being penalised for a lack of conciseness in the communication criterion.</p>
<p>31. Can students work together when they do the experiments for the IA?</p>	<p>There may be cases where an extra pair of hands is required and students should be encouraged to help each other out. However, it would not be acceptable for both students to use the same data as part of their individual investigations.</p>
<p>32. Will the students be penalised for only using basic equipment in the IA due to the school restrictions on apparatus?</p>	<p>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.</p>
<p>33. What happens if no data is generated during the IA investigation?</p>	<p>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.</p>
<p>34. Is it allowed to use university equipment for all (or part) of the internal assessment?</p>	<p>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.</p>
<p>35. Are there any guidelines for the format of the IA (font size etc.)?</p>	<p>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. It is helpful to markers if the text is double-spaced. The student does not need to include a cover page because the form ES&S/ICCS exists to provide all the relevant information. In addition, no abstract, nor table of contents is required.</p>

36. 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 (up to 2250 words) 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.
37. What sort of analysis/statistics is expected from students doing a database project for their IA?	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.
38. 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?	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.
39. Does the communication criterion mean that students should be presenting their IA through a variety of media?	No. The communication criterion is designed to assess skills in creating a logical, clear and well-structured written report.
40. What if students want to use the same IA for science subjects, or in their extended essay?	This is not permitted.
41. Is peer review of a draft copy of the internal assessment allowed?	This is not permitted since the IA is an individual investigation and a peer review implies collaboration.
Questions related to internal assessment: Administration	
42. How will I arrange the IA in my school, which has several classes with 25 students in each?	Whilst there is a change in the internal investigation task, schools have been carrying out practical work and IA over the past years, and so the adaptations needed should not be radical. The total amount of time for experimentation/data collection will be in the region of 4-6 hours, and not all students will be doing this as a hands-on experiment.

<p>43. How do I manage many different investigations running in a single classroom session?</p>	<p>The challenge comes from the fact that each student will be doing a different investigation and this may put strain on resources. Teachers could consider carrying out a phased IA, with some doing research whilst others are executing practical work, and others are planning their write up or analysing data. If students let their teachers know what their plan is and what resources they need, they can be divided into groups to work at different times. The key is to plan ahead with the students in order to ensure the smooth running of each investigation.</p> <p>There is a guidance document in the TSM.</p>
<p>44. How will we fit the new IA into the scheme of work?</p>	<p>There is a guidance document in the TSM.</p>
<p>45. How do we do the internal assessment in one year? (anticipated candidates)</p>	<p>Teachers will need to allow time at the start of the course to scaffold the skills required for the internal assessment before the students begin with their individual investigation. SL courses require 150 hours including 30 hours for practical work.</p>
<p>Questions related to internal assessment: Moderation</p>	
<p>46. What needs to be sent to the moderator?</p>	<p>A copy of form ES&S/IA. A copy of form ES&S/PSOW for each class. A form ES&S/ICCS along with the marked IA work for each student in the sample. Form 4/ICCS contains the marks for the six criteria of the IA along with the title of the individual investigation. Ensure the forms are signed in the appropriate places by the teacher(s) and student.</p>
<p>47. Is there a plan to upload IA samples?</p>	<p>There are plans to upload more student work electronically in the near future and IB DP coordinators will be informed of when this comes into effect.</p>
<p>48. What support does the IB provide for completing the IA? Are you planning to have online courses specifically for the new IA with a focus on the marking?</p>	<p>Teachers are encouraged to use the exemplars on the OCC to gain an understanding of the types of task that may be carried out and the standard required for each of the criteria. Category 3 workshops with a focus on IA are available both as face to face and online workshops. Category 1 and 2 workshops will also have some sessions which look at the marking of exemplar IA work. Details of these can be found from the homepage of www.ibo.org and following the links for workshops.</p>
<p>49. Is there any change in the format of form ES&S/PSOW?</p>	<p>Student marks are no longer entered onto the form ES&S/PSOW form as these now go onto the form ES&S/ICCS. This apart, most of the information is the same as the previous form.</p>

	The individual investigation has been pre-filled at the top of the form. A box has also been added to show the total number of hours both to help teachers and moderators to ensure the minimum 30 hours have been carried out.
50. Where do I find information on the moderation process?	This can be found in the Handbook of procedures for the Diploma Programme in the assessment procedures (under 'Internal assessment'), the Group 4 The sciences section or the Group 3 Individuals and societies section (under 'Samples for moderation').
51. Will there be any changes to the way that the IA is moderated?	At the time of writing, the process of moderation will continue unchanged. A new procedure of dynamic sampling is being developed for use with electronic samples and this will be introduced for IA in the near future.
52. Are we going to get feedback from the moderator?	All schools receive a feedback form shortly after the release of the examination results. Your IB DP Coordinator is able to access this through IBIS.
Questions regarding the external examinations	
53. Where can I find question papers and mark schemes for ESS?	These are available to purchase from the IB online store.
54. Are the types of examination questions changing?	Yes. Paper 1 will now be a case study of duration 1 hour, and paper 2 of duration 2 hours, will contain short answer questions as well as a choice of 2 out of 4 essay questions . Across both papers, approximately 50% of the marks will be awarded for questions addressing assessment objective 3. For more details please see specimen papers on the ESS website.
55. How will the essay questions in section B of paper 2 be marked?	Each question is marked out of 20 marks and is typically broken down into three parts, (a), (b) and (c). Parts (a) and (b) are marked using marking criteria, but (c), which will always be awarded a maximum of 9 marks, is marked using markbands. In every question part (c) will require students to think holistically about a problem or issue and to provide an answer that is illustrated with examples from their own studies. Students and teachers should be familiar with the markbands in order to gain better insight into the expectations of these questions.
56. Will the significant ideas play a role in the final examinations?	Yes, the significant ideas at the start of each sub-topic are likely to be assessed in the external examinations.
57. Will the big questions be assessed in the final examinations?	Yes. The big questions have been designed to encourage a holistic approach to teaching and learning in ESS and big questions such as those given in the guide may be asked in varying contexts in both paper 1 and paper 2 of the final

	examinations.
58. Will the command terms used in the examinations be the same as for the old course?	One new command term has been added to the new course in assessment level three: “to what extent...?”. The definition of this command term can be found on the ESS website along with all other command term definitions. This aside, all the command terms used remain the same.
59. Are there grade descriptors for what is expected at each level in the examinations?	Grade descriptors relevant for the new course will be available for the 2017 examination session onwards.
60. How is the number of marks achieved on an examination paper translated to IB grades? Is there any formula or table that pairs exam paper marks to the achievement levels and if so, where can I find it?	To see relative performance for each component, marks for each one are converted into separate grade boundaries from 1-7 using the component grade boundaries found in the subject reports. However, these component grades are NOT used to calculate the overall grade. This is done by adding together the percentage marks for each component (three written examinations plus internal assessment), after applying the weighting factors, to give an overall percentage mark which is then converted into a grade of 1-7 using the overall grade boundaries.