

Environmental systems and societies— Frequently asked questions

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Diploma Programme

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IB mission statement

The International Baccalaureate aims to develop inquiring, knowledgeable and caring young people who help to create a better and more peaceful world through intercultural understanding and respect.

To this end the organization works with schools, governments and international organizations to develop challenging programmes of international education and rigorous assessment.

These programmes encourage students across the world to become active, compassionate and lifelong learners who understand that other people, with their differences, can also be right.



IB learner profile

The aim of all IB programmes is to develop internationally minded people who, recognizing their common humanity and shared guardianship of the planet, help to create a better and more peaceful world.

As IB learners we strive to be:

INQUIRERS

We nurture our curiosity, developing skills for inquiry and research. We know how to learn independently and with others. We learn with enthusiasm and sustain our love of learning throughout life.

KNOWLEDGEABLE

We develop and use conceptual understanding, exploring knowledge across a range of disciplines. We engage with issues and ideas that have local and global significance.

THINKERS

We use critical and creative thinking skills to analyse and take responsible action on complex problems. We exercise initiative in making reasoned, ethical decisions.

COMMUNICATORS

We express ourselves confidently and creatively in more than one language and in many ways. We collaborate effectively, listening carefully to the perspectives of other individuals and groups.

PRINCIPLED

We act with integrity and honesty, with a strong sense of fairness and justice, and with respect for the dignity and rights of people everywhere. We take responsibility for our actions and their consequences.

OPEN-MINDED

We critically appreciate our own cultures and personal histories, as well as the values and traditions of others. We seek and evaluate a range of points of view, and we are willing to grow from the experience.

CARING

We show empathy, compassion and respect. We have a commitment to service, and we act to make a positive difference in the lives of others and in the world around us.

RISK-TAKERS

We approach uncertainty with forethought and determination; we work independently and cooperatively to explore new ideas and innovative strategies. We are resourceful and resilient in the face of challenges and change.

BALANCED

We understand the importance of balancing different aspects of our lives—intellectual, physical, and emotional—to achieve well-being for ourselves and others. We recognize our interdependence with other people and with the world in which we live.

REFLECTIVE

We thoughtfully consider the world and our own ideas and experience. We work to understand our strengths and weaknesses in order to support our learning and personal development.

The IB learner profile represents 10 attributes valued by IB World Schools. We believe these attributes, and others like them, can help individuals and groups become responsible members of local, national and global communities.

Frequently asked questions in environmental systems and societies

This document does not repeat information already provided in other documents such as the course [guide](#), [teacher support material \(TSM\)](#) and [specimen papers](#).

In this document, references to the old guide refer to the version published for first examinations in 2017. References to the current guide refer to the guide published for first examinations in 2026.

If you have further questions after reading all these FAQs, please contact IB Answers.

Questions related to the syllabus

1. Is there a prescribed teaching order or should teaching follow the syllabus order?	The expectation is that “Topic 1: Foundation” is taught first, as this covers the key concepts explicitly stated in the guide. Teachers are encouraged to personalize their approach to the syllabus according to their circumstances and interests. The order in which topics 2 to 8 are taught is not stipulated, and teachers can make their own judgement on this.
2. Will the TSM provide example unit plans?	The current TSM is designed to provide teachers with further guidance on ways of planning the course, advice on how to approach each assessment component, example student activities, skills and tools to support teaching, and suggestions for possible resources. It is important to note that the use of unit plans is not a requirement.
3. The new higher level (HL) includes more hours of instruction in topics 2 to 8 through the HL lenses. However, the experimental programme establishes the same 30 hours for practical activities at both levels. Why are more hours not allocated for the practical work at the HL?	Both the standard level (SL) and the HL courses have the same internal assessment (IA) task, criteria and skill requirements: therefore, the experimental programme has the same requirement. The distinction between SL and HL is made in the weighting of the IA for the overall environmental systems and societies (ESS) grade. Practical work is an important aspect of the ESS course. During the course, 50 hours are allocated for the experimental programme. This comprises 30 hours of practical activities, 10 hours for the collaborative sciences project and 10 hours for the individual investigation (IA).
4. How should teachers implement the curriculum in combined classes for SL and HL?	The TSM includes a section titled “Routes through the course”. This includes topic sequences that illustrate how to teach a combined SL and HL class over two years, and examples for separate SL and HL classes.
5. Is there enough time allocated to build the skills in the course?	The guide suggests where skills can be implemented within each subtopic. Teachers can choose to teach skills where they see the best fit. The list of required skills is mostly the explicit articulation of what is implicitly required. Therefore, this should not pose any significant challenges in terms of the allocated hours for teaching the syllabus. Time for development of the skills is included in the recommended teaching hours. The 30 hours of the experimental programme also provide an opportunity to introduce and develop skills.
6. Are the inquiry skills the same as those for Diploma Programme	In biology, chemistry and physics, there are three sections within the inquiry process that link to the IA. ESS Inquiry 1 places more emphasis

<p>(DP) biology, chemistry and physics?</p> <p>How similar are the tools in ESS compared to those in the other DP science subjects?</p>	<p>on risk assessment and ethical issues, reflecting the unique interdisciplinary nature of the ESS course.</p> <p>Skills should be integrated into the teaching of the syllabus when they are relevant to the topics being covered. Tools have been developed for ESS as an interdisciplinary subject. Care has been taken to incorporate skills from both the individuals and societies subjects and the science subjects. Therefore, questionnaires and other social science skills are also included.</p> <p>Note that ESS also has “Tool 4: Systems and models”, which is unique to it.</p>
<p>7. Should teachers incorporate theory of knowledge (TOK)?</p> <p>Moreover, why are links no longer included from ESS topics to TOK and international-mindedness?</p>	<p>All DP teachers are encouraged to provide opportunities for students to explore TOK questions throughout all DP courses.</p> <p>Many aspects of the ESS course lend themselves to exploring knowledge questions, and examples are provided in the guide and the TSM.</p> <p>The TOK guide provides further details that would be difficult to capture in the ESS guide, and the evolving nature of TOK also means that it will be updated during the lifetime of the ESS guide.</p>

Questions related to IA: Classroom practice

<p>8. What is the justification for the time and length of the IA compared with the extended essay (EE)?</p>	<p>The EE is a scholarly piece of work that requires research and a literature review at a higher level than the IA. Therefore the time allocated for the IA is 10 hours and that for the EE is 40 hours.</p> <p>The 10 hours allotted to the IA individual investigation are for the teacher to explain the requirements; to provide consultation on the research question, methodology and data collection; and to otherwise support and monitor students’ progress.</p> <p>The individual investigation is an open-ended task in which the student gathers and analyses data to answer their own formulated research question. The individual investigation covers assessment objectives 1, 2, 3 and 4.</p> <p>The maximum permitted word count of 3,000 allows students to address all intended objectives. The ESS guide is aligned with the new guides for biology, chemistry and physics (first assessment 2025), whose IAs also have a 3,000-word limit.</p>
<p>9. Why is the weighting of the IA lower for HL, at 20 percent, than for SL, at 25 percent?</p>	<p>This reflects the weighting of the IA in each course.</p> <p>For SL, the course is 150 hours long, of which 50 hours are allocated for the IA.</p> <p>The HL course is 240 hours long, of which the IA represents 50 hours.</p>

Questions related to IA: Criterion A

<p>10. How important is it for students to demonstrate an understanding of the chosen environmental issue in this criterion?</p>	<p>This criterion assesses the extent to which the student establishes and explores an environmental issue (either local or global) for an investigation, and develops this to state a relevant and focused research question.</p>
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	<p>The background information on the environmental topic or issue should contain information on the theory or model that is being explored, or should include a literature review. The background information provided underpins the reasoning for developing the research question and identifying variables.</p> <p>General accounts of the broad area of study will not achieve the highest marks: for example, a general review of carbon dioxide levels in the atmosphere. An investigation that refers to, and examines, the Keeling curve for carbon dioxide levels and models for predicting future changes is likely to be more successful.</p> <p>Further guidance is provided in the TSM.</p>
11. Criterion A states that the research question needs to be unique to the student. Does this mean that the uniqueness of the student's context should be reflected in the research question?	<p>Both the research question and the background information provided need to be considered in the verification. Both need to be unique to ensure the developing IA is unique to the student.</p> <p>The research question needs to be unique to the student. In the case of group work, the teacher should verify this. The teacher should check that:</p> <ul style="list-style-type: none"> the research question is unique to the student the research question contains variables: <ul style="list-style-type: none"> an independent variable or two correlated variables a dependent variable or a derived dependent variable the scientific names of organisms are used (where relevant). <p>The TSM contains detailed guidance to support unpacking the assessment criteria. Teachers can consult the subsection titled "Deciding on the research question" for further support.</p>

Questions related to IA: Criterion B

12. What kind of explanation will a student need to give to achieve the best performance in the "strategy" criterion (criterion B)?	<p>The student will need to discuss at least one tension that could have been, or already has been, created.</p> <p>A key purpose of this criterion is to illustrate to students that decisions regarding environmental issues require compromise and involve multiple stakeholders, often with opposing values or interests.</p> <p>Students describe an existing or developing strategy, and then discuss the tensions that different perspectives within the strategy will inevitably involve.</p>
13. In the TSM, the unpacking of criterion B states that the discussion includes at least two contrasting views/perspectives, and includes the arguments used by each perspective regarding its potential outcomes. Are candidates obliged to discuss perspectives/worldviews mentioned in the syllabus, e.g. technocentrism vs ecocentrism?	<p>The teacher should check that:</p> <ul style="list-style-type: none"> the strategy described addresses an environmental topic or issue linked to the research question the strategy already exists or is being developed; strategies created by the student are not appropriate a tension(s) that arise(s) from the strategy when viewed from different perspectives is (are) discussed the discussion includes at least two contrasting worldviews/ perspectives on a stated tension the discussion includes the arguments used by each perspective regarding its potential outcomes a personal perspective on the stated strategy is included.

<p>14. What is the justification for adding the criterion on “strategy”?</p>	<p>A key purpose of this criterion is to illustrate to students that decisions addressing environmental issues require compromise and involve multiple stakeholders, often with opposing values or interests.</p> <p>The “strategy” criterion arises from the need for students to grapple with the difficulties or tensions inherent in the implementation of solutions to environmental problems arising from conflicting interests.</p> <p>The strategy can be a plan of action, a management option or any other intervention designed to address an environmental issue. The strategy might be based on the local context of the study or it could be broader, depending on the environmental topic or issue under consideration.</p> <p>Local strategies and issues could include, but would not be limited to, references to photographs, local pamphlets, posters or brochures. For example, community-based action to save a local forest might be linked to a research question on deforestation and climate change.</p>
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Questions related to IA: Criterion C

<p>15. Can a student complete an IA with only qualitative data?</p>	<p>Yes, this is possible. Criterion C assesses the extent to which the student has developed an appropriate and replicable method to collect data that is relevant to the research question. The data could be primary or secondary, qualitative or quantitative.</p> <p>Qualitative data is collected through observation and subjective judgement; it is non-numerical and does not involve measurement. Qualitative data may be processed, coded or quantified, where appropriate, or it may be presented through images or as text. Students are advised to remember the word limit when presenting qualitative information as text only.</p> <p>Most students try to convert qualitative data into quantitative data to help answer their research question. Some qualitative data can be used to set the scene for the quantitative data collection: for example, the weather on the day of fieldwork data gathering.</p> <p>The data collected must provide sufficient information to enable the drawing of adequate interpretation, analysis and conclusions as they relate to the research question.</p>
<p>16. Are guidelines available for data collection methods such as surveys and interviews?</p>	<p>Some descriptions and guidelines are found in table 6 of the TSM, captioned “Strengths and weaknesses of qualitative data collection methods”.</p> <p>Interviews</p> <p>The student asks questions of one person or a group of people in formally structured, semi-structured or unstructured ways. The questions could be open or closed, and are designed to produce more quantitative or qualitative data.</p> <p>Questionnaires and surveys</p> <p>The student asks many people a set of questions, which may include predetermined answers to choose from.</p> <p>It is strongly recommended that students consider the appropriateness and quantity of data as they relate to the research question.</p>

17. For primary data, should students follow the 5 × 5 rule to collect data?	<p>There is no strict 5 × 5 rule in the ESS course, despite this belief being shared among teachers. Whether the data collected is sufficient depends on the nature of the task.</p> <p>The TSM includes the guidance below:</p> <p>Investigative work for ESS inherently contains variations in data. Though there is no specific requirement to follow the 5 × 5 rule, it is recommended that teachers ensure students have sufficient data from which to draw appropriate conclusions and carry out standard deviation analysis.</p> <p>ESS, especially ecological studies, because of its complexity and inherent variability, requires replicate observations and multiple samples. Generally, the lower limit is five measurements of an independent variable, with five repeats for each one. For example, in a study examining how a storm drain affects dissolved oxygen levels in a stream, the student might consider five sites—one site above the drain and four below it. The student should take five samples at each sampling site, thus generating 25 data points (5 × 5). The 5 × 5 rule is a good guide for many laboratory-based investigations and some field studies.</p> <p>When carrying out transect studies, it may prove difficult to collect that much data because of time constraints; however, this should be explained in the report.</p>
18. Is there a recommended range for secondary data collection? For example, if a candidate collected secondary data between the years 2008 and 2018, should they justify the reason for choosing this range of years?	This depends on the availability of the data and the observed patterns within it. Sufficient data should be collected to adequately address the research question. Therefore, the choice of the range should be justified to add depth and breadth to the investigation.

Questions related to IA: Criterion D

19. Are there any resources for the data analysis?	There are multiple online resources which provide tools for data analysis. The TSM provides further support in this area, namely on how to find appropriate resources online, under the section “Planning the course”.
20. Are sample calculations necessary under criterion D?	Including sample calculations, or references to tools that have been used to carry out those calculations, is recommended where appropriate (e.g. mentioning the graphing display calculator in a particular spreadsheet software).
21. What level of data analysis will be required?	<p>Any data processing must be appropriate to the focus of the investigation, to answer the research question and enable a conclusion to be drawn. Mathematical skills are important since the interpretation of data analysis is one of the key skills here.</p> <p>If sufficient data is lacking, any processing will be superficial. Students should recognize the potential for such a lack of data within their experiments, and review the suitability of the method before starting the data processing. Alternatively, a lack of primary data could be</p>

supplemented by using secondary data from data banks or simulations, to provide sufficient data for analysis.

Questions related to IA: Criterion E

22. Does the conclusion also need to address the strategy and perspectives?	<p>This is not an explicit requirement. In this criterion, the analysis explains all the patterns and trends within the data that are relevant to the research question, including measures of bias, reliability, validity and uncertainty. The conclusion addresses the research question and is supported by the analysis presented.</p> <p>A supported conclusion should include measures of bias, reliability, validity and uncertainty.</p> <p>Further guidance is available in the TSM.</p>
23. What is expected of the student in the analysis section, specifically in connection with explaining the biases, reliability, validity and uncertainty? Are students required to discuss these aspects in the evaluation section too?	<p>Guidance on the interpretation of the IA criteria is provided in the TSM under the section "Criterion E: Analysis and conclusion".</p>

Questions related to IA: Criterion F

24. The descriptors in criterion F mention only weaknesses, limitations and improvements. Does this mean that students do not need to evaluate the strengths of their experiments?	<p>There is no requirement to indicate the strengths of experiments. The possibility of including strengths was discussed at length within the IB and with stakeholders during the development of the course. It was concluded that students generally provided superficial strengths which added little to the quality of the assignment. It was therefore decided not to include strengths in the criterion.</p> <p>The teachers should check that:</p> <ul style="list-style-type: none"> • methodological and procedural limitations or weaknesses are considered • the evaluation includes the relative impact of specific limitations or weaknesses that affect the conclusion • evidence is provided to support the identified limitations or weaknesses, including measures of reliability, validity and uncertainty • realistic and relevant improvements for specific weaknesses and limitations are provided.
25. Will there be a Practical scheme of work (PSOW) form?	<p>The PSOW form has been replaced by Record of experimental programme. This is an essential planning and recording document for teachers to ensure that a suitable range of practical activities is carried out and that the appropriate hours are allocated. It encompasses the practical activities, the collaborative sciences project and the individual investigation.</p> <p>It is not necessary to submit this form to the IB. Teachers should continue to use this form (or their own version of it, including all the same information) to record the practical activities carried out by their</p>

	<p>students. The form should be retained in the school and made available to the IB when needed, for example, during the school's five-year evaluation process.</p>
<p>26. Should the individual investigation be addressed from a scientific perspective or a social science perspective?</p>	<p>The IA is interdisciplinary; the focus should be on an environmental issue and the tensions that can impact environmental or societal issues.</p> <p>Some topics or issues may be relevant to other subjects. For example, air pollution and human health have a more biological relevance whereas acid rain is chemistry-focused; population dynamics and societal issues, such as crime, are more geography-focused.</p> <p>Students' individual investigations can be formulated to concentrate on an environmental issue. For example, air pollution impacts all biotic parts of an ecosystem. Human health can be used as a model for the rest of the system, while biotic indicator species, such as lichen, or biotic indices like those used to assess stream health, can demonstrate sensitivity or tolerance to pollution.</p>
<p>27. Are students allowed to collaborate while gathering data for their individual investigation?</p>	<p>Students can use the same methodology to collect the data, but all authoring for the IA, including the description of the methodology, must be done individually by each student.</p> <p>For example, if 3 students used quadratic sampling and collected data from 60 quadrats, each student can claim 20 quadrats from these as their own dataset. They then need to indicate this aspect in their IA data.</p> <p>If any of these students would like to refer to the rest of the 40 quadrats for comparison purposes, they are expected to indicate in the report that the data does not belong to a particular student and was gathered in collaboration.</p>
<p>28. Are students allowed to work on similar topics using the same measurements?</p>	<p>In all cases, and in accordance with the guidance regarding group work provided in the IA section of the ESS guide, each student must use data that is distinct from that of their group members, even if it is drawn from a larger, communally acquired dataset. Students are required to develop their own unique research question and methodology, with unique data.</p>
<p>29. Is there a list of distinct skills that are required?</p>	<p>Yes, the skills students will experience are addressed in the section "Skills in the study of environmental systems and societies" in the guide.</p>
<p>30. Is there a list of distinct case studies students must know?</p>	<p>The TSM provides some suggestions for general case study resources. Teachers are allowed and encouraged to choose their own case studies too.</p>
<p>31. Do students need to learn how to use and understand all the statistical tests listed in the "Tool 3: Mathematics" section?</p>	<p>The list of skills that students must experience is mostly the explicit articulation of what was always implicitly required. The 30 hours of experimental programme for both SL and HL also provide opportunities to scaffold these skills. Teachers can choose to teach skills where they see the best fit to the syllabus. Guidance on how the tools can be applied in the learning and teaching of the subject is summarized in each subtopic.</p>
<p>32. Will the skills in the study of ESS be assessed in the final examinations?</p>	<p>The skills in the study of ESS can be assessed through internal and external assessment.</p>