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Diploma Programme

# Extended essay guide

First examinations 2013





# Extended essay guide



## **Diploma Programme Extended essay guide**

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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.

IB learners strive to be:

|                      |   |
|----------------------|---|
| <b>Inquirers</b>     | They develop their natural curiosity. They acquire the skills necessary to conduct inquiry and research and show independence in learning. They actively enjoy learning and this love of learning will be sustained throughout their lives.   |
| <b>Knowledgeable</b> | They explore concepts, ideas and issues that have local and global significance. In so doing, they acquire in-depth knowledge and develop understanding across a broad and balanced range of disciplines.   |
| <b>Thinkers</b>      | They exercise initiative in applying thinking skills critically and creatively to recognize and approach complex problems, and make reasoned, ethical decisions.  |
| <b>Communicators</b> | They understand and express ideas and information confidently and creatively in more than one language and in a variety of modes of communication. They work effectively and willingly in collaboration with others.  |
| <b>Principled</b>    | They act with integrity and honesty, with a strong sense of fairness, justice and respect for the dignity of the individual, groups and communities. They take responsibility for their own actions and the consequences that accompany them.   |
| <b>Open-minded</b>   | They understand and appreciate their own cultures and personal histories, and are open to the perspectives, values and traditions of other individuals and communities. They are accustomed to seeking and evaluating a range of points of view, and are willing to grow from the experience. |
| <b>Caring</b>        | They show empathy, compassion and respect towards the needs and feelings of others. They have a personal commitment to service, and act to make a positive difference to the lives of others and to the environment.  |
| <b>Risk-takers</b>   | They approach unfamiliar situations and uncertainty with courage and forethought, and have the independence of spirit to explore new roles, ideas and strategies. They are brave and articulate in defending their beliefs.   |
| <b>Balanced</b>      | They understand the importance of intellectual, physical and emotional balance to achieve personal well-being for themselves and others.  |
| <b>Reflective</b>    | They give thoughtful consideration to their own learning and experience. They are able to assess and understand their strengths and limitations in order to support their learning and personal development.  |

# The Diploma Programme

The Diploma Programme is a rigorous pre-university course of study designed for students in the 16 to 19 age range. It is a broad-based two-year course that aims to encourage students to be knowledgeable and inquiring, but also caring and compassionate. There is a strong emphasis on encouraging students to develop intercultural understanding, open-mindedness, and the attitudes necessary for them to respect and evaluate a range of points of view.

## The Diploma Programme hexagon

The course is presented as six academic areas enclosing a central core. It encourages the concurrent study of a broad range of academic areas. Students study: two modern languages (or a modern language and a classical language); a humanities or social science subject; an experimental science; mathematics; one of the creative arts. It is this comprehensive range of subjects that makes the Diploma Programme a demanding course of study designed to prepare students effectively for university entrance. In each of the academic areas students have flexibility in making their choices, which means they can choose subjects that particularly interest them and that they may wish to study further at university.

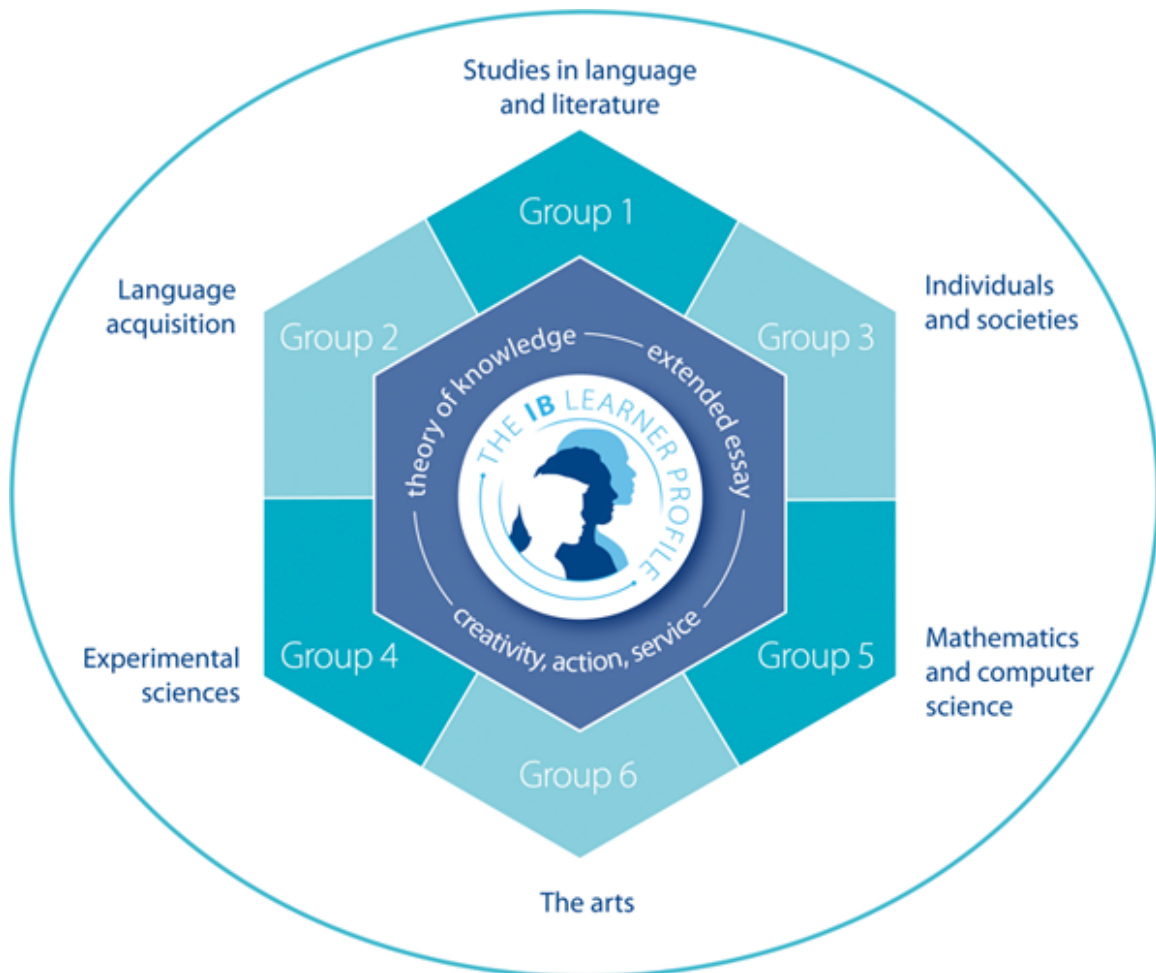


Figure 1  
Diploma Programme model

## Choosing the right combination

Students are required to choose one subject from each of the six academic areas, although they can choose a second subject from groups 1 to 5 instead of a group 6 subject. Normally, three subjects (and not more than four) are taken at higher level (HL), and the others are taken at standard level (SL). The IB recommends 240 teaching hours for HL subjects and 150 hours for SL. Subjects at HL are studied in greater depth and breadth than at SL.

At both levels, many skills are developed, especially those of critical thinking and analysis. At the end of the course, students' abilities are measured by means of external assessment. Many subjects contain some element of coursework assessed by teachers. The course is available for examinations in English, French and Spanish.

## The core of the hexagon

All Diploma Programme students participate in the three course requirements that make up the core of the hexagon. Reflection on all these activities is a principle that lies at the heart of the thinking behind the Diploma Programme.

The theory of knowledge (TOK) course encourages students to think about the nature of knowledge, to reflect on the process of learning in all the subjects they study as part of their Diploma Programme course, and to make connections across the academic areas. The extended essay, a substantial piece of writing of up to 4,000 words, enables students to investigate a topic of special interest that they have chosen themselves. It also encourages them to develop the skills of independent research that will be expected at university. Creativity, action, service (CAS) involves students in experiential learning through a range of artistic, sporting, physical and service activities.

## The IB mission statement and the IB learner profile

The Diploma Programme aims to develop in students the knowledge, skills and attitudes they will need to fulfill the aims of the IB, as expressed in the organization's mission statement and the learner profile. Teaching and learning in the Diploma Programme represent the reality in daily practice of the organization's educational philosophy.

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# Nature of the extended essay

The extended essay is an in-depth study of a focused topic chosen from the list of approved Diploma Programme subjects—normally one of the student's six chosen subjects for the IB diploma. It is intended to promote high-level research and writing skills, intellectual discovery and creativity. It provides students with an opportunity to engage in personal research in a topic of their own choice, under the guidance of a supervisor (a teacher in the school). This leads to a major piece of formally presented, structured writing, in which ideas and findings are communicated in a reasoned and coherent manner, appropriate to the subject chosen. It is recommended that completion of the written essay is followed by a short, concluding interview, or *viva voce*, with the supervisor.

The extended essay is assessed against common criteria, interpreted in ways appropriate to each subject.

The extended essay is:

- compulsory for all Diploma Programme students
- externally assessed and, in combination with the grade for theory of knowledge, contributes up to three points to the total score for the IB diploma
- a piece of independent research/investigation on a topic chosen by the student in cooperation with a supervisor in the school

- chosen from the list of approved Diploma Programme subjects, published in the *Handbook of procedures for the Diploma Programme*
- presented as a formal piece of scholarship containing no more than 4,000 words
- the result of approximately 40 hours of work by the student
- concluded with a short interview, or *viva voce*, with the supervising teacher (recommended).

In the Diploma Programme, the extended essay is the prime example of a piece of work where the student has the opportunity to show knowledge, understanding and enthusiasm about a topic of his or her choice. In those countries where it is the norm for interviews to be required prior to acceptance for employment or for a place at university, the extended essay has often proved to be a valuable stimulus for discussion.

### **The extended essay and the IB learner profile**

The learning involved in researching and writing the extended essay is closely aligned with the development of many of the characteristics described in the IB learner profile. Students are, to a large extent, responsible for their own independent learning, through which they acquire and communicate in-depth knowledge and understanding. The research process necessarily involves intellectual risk-taking and extensive reflection; open-mindedness, balance and fairness are key prerequisites for a good extended essay.

Students and teachers familiar with the IB Middle Years Programme (MYP) will find that the extended essay is a natural progression from the MYP personal project.

### **Relationship to theory of knowledge**

Whichever subject is chosen, the extended essay shares with the theory of knowledge (TOK) course a concern with interpreting and evaluating evidence, and constructing reasoned arguments. Where the two differ is in the emphasis placed on the research process and its formal outcomes. These aspects are of primary importance in the extended essay but are given much less weight in TOK: in the *Theory of knowledge guide* (updated November 2008) the section describing the TOK assessment tasks states that “neither the [TOK] essay nor the presentation is primarily a research exercise”. At a more abstract level, both TOK and the extended essay promote reflection on the nature of knowledge and on how new knowledge is produced.

### **International dimensions**

Some extended essay subjects include cross-cultural questions within them. Others invite such an approach. Whatever the subject, the extended essay student should strive to find relevant information from a diverse range of sources.

## **Aims**

The aims of the extended essay are to provide students with the opportunity to:

- pursue independent research on a focused topic
- develop research and communication skills
- develop the skills of creative and critical thinking
- engage in a systematic process of research appropriate to the subject
- experience the excitement of intellectual discovery.



## Assessment objectives

In working on the extended essay, students are expected to:

1. plan and pursue a research project with intellectual initiative and insight
2. formulate a precise research question
3. gather and interpret material from sources appropriate to the research question
4. structure a reasoned argument in response to the research question on the basis of the material gathered
5. present their extended essay in a format appropriate to the subject, acknowledging sources in one of the established academic ways
6. use the terminology and language appropriate to the subject with skill and understanding
7. apply analytical and evaluative skills appropriate to the subject, with an understanding of the implications and the context of their research.

Note: “material” has different meanings in different subjects. It may be data or information; it may be arguments or evidence.

## Responsibilities of the school

It is **required** that the school:

- ensures that extended essays conform to the regulations outlined in this guide
- ensures that students determine the subject for their extended essay from the approved extended essay list (in the *Handbook of procedures for the Diploma Programme*) before choosing the topic
- ensures that each student has an appropriately qualified supervisor, who is a teacher within the school
- provides supervisors and students with the general and subject-specific information, and guidelines for the extended essay, contained in this guide
- provides supervisors with recent extended essay subject reports
- ensures that supervisors are familiar with the IB document *Academic honesty*
- explains to students the importance of the extended essay in the overall context of the Diploma Programme
- explains to students that they will be expected to spend approximately 40 hours on their extended essay.

It is **strongly recommended** that the school:

- sets internal deadlines for the stages of producing the extended essay, including provision for a concluding interview (*viva voce*)
- ensures that students have been taught the necessary research skills
- provides appropriate training for supervisors.

## Responsibilities of the supervisor

It is **required** that the supervisor:

- provides the student with advice and guidance in the skills of undertaking research
- encourages and supports the student throughout the research and writing of the extended essay
- discusses the choice of topic with the student and, in particular, helps to formulate a well-focused research question
- ensures that the chosen research question satisfies appropriate legal and ethical standards with regard to health and safety, confidentiality, human rights, animal welfare and environmental issues
- is familiar with the regulations governing the extended essay and the assessment criteria, and gives copies of these to the student
- monitors the progress of the extended essay to offer guidance and to ensure that the essay is the student's own work (this may include presenting a section of the essay for supervisor comment)
- reads and comments on one completed draft only of the extended essay (but does **not** edit the draft)
- reads the final version to confirm its authenticity
- submits a predicted grade for the student's extended essay to IB Cardiff
- completes the supervisor's report (if the extended essay cover is not signed by both the student and the supervisor, the essay will not be accepted for assessment and may be returned to the school)
- provides an explanation in the report in cases where the number of hours spent with the student in discussing the extended essay is zero; in particular, it is necessary to describe how it has been possible to guarantee the authenticity of the essay in such circumstances
- writes a report and presents it to the school's Diploma Programme coordinator if malpractice, such as plagiarism, is suspected in the final draft.

It is **strongly recommended** that the supervisor:

- reads recent extended essay reports for the subject
- spends between three and five hours with each student, including the time spent on the *viva voce*
- ensures that the chosen research question is appropriate for the subject
- advises students on:
  - access to appropriate resources (such as people, a library, a laboratory)
  - techniques of information-/evidence-/data-gathering and analysis
  - writing an abstract
  - documenting sources
- conducts a short, concluding interview (*viva voce*) with the student before completing the supervisor's report.

The student may work with or consult external sources, but it remains the responsibility of the supervisor within the school to complete all the requirements described above.

## Responsibilities of the student

It is **required** that students:

- choose a topic that fits into one of the subjects on the approved extended essay list (in the *Vade Mecum*)
- observe the regulations relating to the extended essay
- meet deadlines
- acknowledge all sources of information and ideas in an approved academic manner.

It is **strongly recommended** that students:

- start work early
- think very carefully about the research question for their essay
- plan how, when and where they will find material for their essay
- plan a schedule for both researching and writing the essay, including extra time for delays and unforeseen problems
- record sources as their research progresses (rather than trying to reconstruct a list at the end)
- have a clear structure for the essay itself before beginning to write
- check and proofread the final version carefully
- make sure that all basic requirements are met (for example, all students should get full marks for the abstract).

## Advice to students from examiners

### Recommended: things to do

Examiners' reports frequently emphasize the following positive steps.

Before starting work on the extended essay, students should:

- read the assessment criteria
- read previous essays to identify strengths and possible pitfalls
- spend time working out the research question (imagine the finished essay)
- work out a structure for the essay.

During the research process, and while writing the essay, students should:

- start work early and stick to deadlines
- maintain a good working relationship with their supervisor
- construct an argument that relates to the research question
- use the library and consult librarians for advice
- record sources as they go along (rather than trying to reconstruct a list at the end)
- choose a new topic and a research question that **can** be answered if there is a problem with the original topic

- use the appropriate language for the subject
- let their interest and enthusiasm show.

After completing the essay, students should:

- write the abstract
- check and proofread the final version carefully.

### Recommended: things to avoid

Examiners' reports also mention these things to be avoided at all costs.

Students **should not** work with a research question that is too broad or too vague, too narrow, too difficult or inappropriate. A good research question is one that asks something worth asking and that is answerable within 40 hours/4,000 words. It should be clear what would count as evidence in relation to the question, and it must be possible to acquire such evidence in the course of the investigation. If a student does not know what evidence is needed, or cannot collect such evidence, it will not be possible to answer the research question.

In addition, students **should not**:

- forget to analyse the research question
- ignore the assessment criteria
- collect material that is irrelevant to the research question
- use the internet uncritically
- plagiarize
- merely describe or report (evidence must be **used** to support the argument)
- repeat the introduction in the conclusion
- cite sources that are not used.

One further piece of advice is as follows: the more background a student has in the subject, the better the chance he or she has of writing a good extended essay. Choosing to write the extended essay in a subject that is not being studied as part of the Diploma Programme often leads to lower marks.

## Researching and writing the extended essay

It is recommended that teachers advise their students about researching and writing the extended essay as follows.

### The research process

When researching the extended essay, students should do the following.

1. Choose the approved Diploma Programme subject for the extended essay.
  - Read the assessment criteria and the relevant subject guidance.
2. Choose a topic.
3. Formulate a well-focused research question.
4. Plan the investigation and writing process.
  - Identify how and where they will gather material.

- Identify which system of academic referencing they will use, appropriate to the subject of the essay.
  - Set deadlines for themselves that will allow them to meet the school's requirements.
5. Plan a structure (outline headings) for the essay. This may change as the investigation develops but it is useful to have a sense of direction.
  6. Undertake some preparatory reading.
    - If students discover that it will not be possible to obtain the evidence needed in the time available, the research question should be changed. This should be done sooner rather than later: students should not lose time waiting and hoping that something will turn up. Students should go back to stage 3, 2 or 1, and choose a new research question that can be answered.
  7. Carry out the investigation.
    - The material gathered should be assembled in a logical order, linked to the structure of the essay. Only then will students know whether they have enough evidence for each stage of the argument so that they can proceed to the next.
    - Students should be prepared for things to go wrong. Sometimes they may discover something later in the investigation that undermines what they thought had been established earlier on. If that happens, the investigation plan needs to be revised.

## Writing the extended essay

The structure of the essay is very important. This is what helps students to organize the argument, making best use of the evidence gathered.

The required elements of the final work to be submitted are listed here. More details about each element are given in the "Formal presentation of the extended essay" section. Please note that the order in which they are presented here is not necessarily the order in which they should be written.

- Title page
- Abstract
- Contents page
- Introduction
- Body (development/methods/results)
- Conclusion
- References and bibliography
- Appendices

Students should use the chosen system of academic referencing as soon as they start writing. That way, they are less likely to forget to include a citation. It is also easier than trying to add references at a later stage. Most modern word processors are helpful with this.

Some students draft the introduction first. If students do that, they must be prepared to revise it once the essay is complete.

The main task is writing the body of the essay, which should be presented in the form of a reasoned argument. The form of this varies with the subject of the essay but, as the argument develops, it should be clear to the reader what relevant evidence has been discovered, where/how it has been discovered and how it supports the argument. In

most subjects, sub-headings within the main body of the essay will help the reader to understand the argument (and will also help the student to keep on track).

Once the main body of the essay is complete, it is possible to finalize the introduction (which tells the reader what to expect) and the conclusion (which says what has been achieved, including notes of any limitations and any questions that have not been resolved).

Any information that is important to the argument should not be included in appendices or footnotes/endnotes. The examiner is not bound to read notes or appendices, so an essay that is not complete in itself will lose marks.

The remaining stages in writing the essay take time but are not difficult. Students need to check that they have cited sources for all material that is not their own, and that the citations are complete and consistent with the chosen referencing system. The bibliography should list only the sources used in the essay. The whole essay needs to be proofread carefully (computer spelling and grammar checkers are useful but will not do everything). Pages must be numbered and the contents page must be completed. The abstract is normally written last.

## Formal presentation of the extended essay

The extended essay should be written in a clear, correct and formal academic style, appropriate to the subject from which the topic is drawn. The use of word processors is encouraged.

### The length of the extended essay

The upper limit is 4,000 words for all extended essays. This upper limit includes the introduction, the body, the conclusion and any quotations, but does **not** include:

- the abstract
- acknowledgments
- the contents page
- maps, charts, diagrams, annotated illustrations and tables
- equations, formulas and calculations
- citations/references (whether parenthetical or numbered)
- footnotes or endnotes
- the bibliography
- appendices.

Essays containing more than 4,000 words are subject to penalties and examiners are not required to read material in excess of the word limit.

Students writing their extended essay in Japanese or Chinese should use the following conversions.

Japanese: 1 word = approximately 2 Japanese characters

Chinese: 1 word = approximately 1.2 Chinese characters

### Title

The title should provide a clear indication of the focus of the essay. It should be precise and not necessarily phrased in the form of a question.

## Abstract

An abstract not exceeding 300 words must be included with the essay submitted. It does not serve as an introduction, but presents an overview of the extended essay, and should, therefore, be written last.

The inclusion of an abstract is intended to encourage students to examine closely the development of an argument within the extended essay and the pertinence of any conclusions that are reached. It is also designed to allow readers to understand quickly the contents of the extended essay.

The minimum requirements for the abstract are for it to state clearly:

- the research question being investigated
- the scope of the investigation
- the conclusion(s) of the extended essay.

The abstract should be typed or word processed on one side of a sheet of paper, and placed immediately after the title page.

## Contents page

A contents page must be provided at the beginning of the extended essay and all pages should be numbered. An index is not required.

## Illustrations

Presentation and overall neatness are important, and it is essential that illustrative material, if included, is well set out and used effectively. Graphs, diagrams, tables and maps are effective only if they are clearly labelled and can be interpreted with ease. All such material that is incorporated into the extended essay must be directly related to the text and acknowledged where appropriate. The use of photographs and other images is acceptable only if they are captioned and/or annotated and are used to illustrate a specific point made in the extended essay.

## Bibliographies, references and citations

An extended essay must reflect intellectual honesty in research practices and provide the reader with the **exact** sources of quotations, ideas and points of view through accurate bibliographies and referencing. Producing accurate citations, referencing and a bibliography is a skill that students should be seeking to perfect. Documenting the research in this way is vital: it allows readers to evaluate the evidence for themselves and it shows the student's understanding of the importance of the sources used.

**Failure to comply with this requirement will be viewed as plagiarism and will, therefore, be treated as a case of malpractice.**

### What is a bibliography?

A bibliography is an alphabetical list of every source used to research and write the essay. Sources that are not cited in the body of the essay, but were important in informing the approach taken, should be cited in the introduction or in an acknowledgment. The bibliography should list only those sources cited.

There are a number of different documentation styles available for use when writing research papers; most are appropriate in some academic disciplines but not others. The supervisor should help the student decide on a style for the particular subject of the essay. It is important to remember that, whatever style is chosen, it must be applied consistently. When choosing the documentation style, the student needs to have a clear understanding of how it is

to be used before embarking on the research task. The documentation style should be applied in both the final draft of the essay and in the initial research stages of taking notes. This is good practice, not only for producing a high-quality final product, but also for reducing the opportunities and temptation to plagiarize.

### **Major documentation styles**

The following are examples of acceptable documentation styles.

- American Political Science Association (APSA)
- American Psychological Association (APA)
- Chicago/Turabian
- Council of Biology Editors (CBE)
- Harvard citation and referencing guide
- Modern Language Association (MLA)
- Numbered references

Finding information about such systems is not difficult. Entering a string such as “academic referencing” into an internet search engine will bring up lots of useful material. Reputable university sites often allow comparison of several different systems (and do not usually disappear overnight). One such example (accessed 13 March 2006) is <http://www.wisc.edu/writing/Handbook/Documentation.html>. There are numerous other online guides to creating bibliographies, as well as printed writers’ handbooks.

### **What is a reference?**

A reference is a way of indicating to the reader, in an orderly form, where information has been obtained. A reference provides all the information needed to find the source material. References must be cited because they acknowledge the sources used, and enable the reader to consult the work and verify the data that has been presented.

References must be given whenever someone else’s work is quoted or summarized. References can come from many different sources, including books, magazines, journals, newspapers, emails, internet sites and interviews.

Internet references should include the title of the extract used as well as the website address, the date it was accessed and, if possible, the author. Caution should be exercised with information on websites that do not give references or that cannot be cross-checked against other sources. The more important a particular point is to the essay, the more the quality of its source needs to be evaluated.

Any references to interviews should state the name of the interviewer, the name of the interviewee, the date and the place of the interview.

### **What is a citation?**

A citation is a shorthand method of making a reference in the body of an essay, which is then linked to the full reference at the end of the essay. A citation provides the reader with accurate references so that he or she can locate the source easily. How sources are cited varies with the particular documentation style that has been chosen. Page numbers should normally be given when referencing printed material: in some styles this will be in the citation, in others in the full reference. Once again, it is important to emphasize that there must be consistency of method when citing sources.

## **Appendices, footnotes and endnotes**

Appendices, footnotes and endnotes are not an essential section of the extended essay and examiners are not required to read them, so care should be taken to include all information of direct relevance to the analysis and



argument in the main body of the essay. An essay that attempts to evade the word limit by including important material in notes or appendices risks losing marks under several criteria.

Unless considered essential, complete lists of raw data should not be included in the extended essay.

Students should not constantly refer to material presented in an appendix as this may disrupt the continuity of the essay.

## The use of other media and materials

Apart from graphic material, materials in other media may be submitted only as supporting appendices and should not detract from the written content of the extended essay.

### Computers

The use of computers is encouraged where they are appropriate as tools for analysing data relevant to the subject of the extended essay. Material such as a hard copy of computer output may be included in the extended essay, but any associated program should be referred to or reproduced, if original, only as an appendix.

Computer programs may only be included (in particular circumstances) in computer science and physics essays. (See the “Computer science” and “Physics” sections for further details.)

### CDs, DVDs and audio-visual materials

The model for the extended essay is a paper in an academic journal. Hence, materials such as these should not normally be included. They are liable to be lost or damaged and the examiner will probably not have time to look at them.

### Specimen materials

Specimen materials used in, or produced by, investigations do not form part of the extended essay and must **not** be submitted. Photographic evidence may be submitted in place of such material.

## The *viva voce* (concluding interview)

The *viva voce* is a short interview between the student and the supervisor, and is a recommended conclusion to the extended essay process. Students who do not attend the *viva voce* may be disadvantaged.

The *viva voce* serves the following purposes.

- A check on plagiarism and malpractice in general
- An opportunity to reflect on successes and difficulties in the research process
- An opportunity to reflect on what has been learned
- An aid to the supervisor’s report

The *viva voce* should last between 10 and 15 minutes. This is included in the recommended amount of time the supervisor should spend with the student. The following are examples of questions that can be asked, which should be adapted to the particular essay and student.

- “I am not clear what you mean on page XXX. You quote Y: could you explain a little more about what this tells us?”

- “On page \*\*\* you cite Z. I couldn’t find this reference (for example, website). Could you tell me more about it?”
- “What have been the high and low points of the research and writing processes?”
- “What were the most interesting aspects of the process? Did you discover anything that surprised you?”
- “What have you learned through writing this essay? Is there any advice you would want to pass on to someone just starting out on an extended essay?”
- “Is there anything else that you would particularly like me to mention in my report?”

In conducting the *viva voce* and writing the report, supervisors should bear in mind the following.

- Examiners want to know that students understand any material (which must be properly referenced) that they have included in their essays. This is particularly important in subjects like mathematics. If the way the material is used in context in the essay does not clearly establish this, the supervisor can check the student’s understanding in the *viva voce* and report on it.
- Minor slips in citation and referencing may lose the odd mark. If there appear to be major shortcomings, the supervisor should investigate thoroughly. No essay should be authenticated if the supervisor believes it contains plagiarism.
- In assessing criterion K (holistic judgment), examiners will take into account any information given in the report about unusual intellectual inventiveness or persistence in the face of unexpected difficulties.
- The report should not attempt to do the examiner’s job. It should refer to things, largely process-related, that may not be obvious in the essay itself.
- Unless there are particular problems, the *viva voce* should end positively. Completion of a major piece of work such as the extended essay is something for students to feel good about.

## Assessment

### Using the assessment criteria

The method of assessment used by the IB is criterion-related. That is to say, the method of assessment judges each student in relation to identified assessment criteria and not in relation to the work of other students.

- The aim is to find, for each criterion, the descriptor that conveys most adequately the achievement level attained by the student. The process, therefore, is one of approximation. In the light of any one criterion, a student’s work may contain features denoted by a high achievement level descriptor combined with features appropriate to a lower one. A professional judgment should be made in identifying the descriptor that approximates most closely to the work.
- Having scrutinized the work to be assessed, the descriptors for each criterion should be read, starting with level 0, until one is reached that describes an achievement level that the work being assessed does not match as well as the previous level. The work is therefore best described by the preceding achievement level descriptor and this level should be recorded.
- Only whole numbers should be used, not partial points such as fractions or decimals.
- The highest descriptors do not imply faultless performance and assessors and teachers should not hesitate to use the extremes, including zero, if they are appropriate descriptions of the work being assessed.

- Descriptors should not be considered as marks or percentages, although the descriptor levels are ultimately added together to obtain a total. It should not be assumed that there are other arithmetical relationships; for example, a level 4 performance is not necessarily twice as good as a level 2 performance.
- A student who attains a particular achievement level in relation to one criterion will not necessarily attain similar achievement levels in relation to the others. It should not be assumed that the overall assessment of the students will produce any particular distribution of scores.

All extended essays are externally assessed by examiners appointed by the IB, and are marked on a scale from 0 to 36. This maximum score is made up of the total criterion levels available for each essay. The total score obtained on the scale 0 to 36 is used to determine in which of the following bands the extended essay is placed. This band, in conjunction with the band for theory of knowledge, determines the number of diploma points awarded for these two requirements. See the following “Award of diploma points” section for further details.

The band descriptors are:

A Work of an **excellent** standard

B Work of a **good** standard

C Work of a **satisfactory** standard

D Work of a **mediocre** standard

E Work of an **elementary** standard.

### **Award of diploma points**

The extended essay contributes to the overall diploma score through the award of points in conjunction with theory of knowledge. A maximum of three points are awarded according to a student’s combined performance in both the extended essay and theory of knowledge.

Both the extended essay and theory of knowledge are measured against published assessment criteria. According to the quality of the work, and based on the application of these assessment criteria, a student’s performance in each of the extended essay and theory of knowledge will fall into one of the five bands described previously.

The total number of points awarded is determined by the combination of the performance levels achieved by the student in both the extended essay and theory of knowledge according to the following matrix.

## The diploma points matrix

|                |                          | Theory of knowledge       |                       |                          |                       |                           |                  |
|----------------|--------------------------|---------------------------|-----------------------|--------------------------|-----------------------|---------------------------|------------------|
|                |                          | Excellent<br><b>A</b>     | Good<br><b>B</b>      | Satisfactory<br><b>C</b> | Mediocre<br><b>D</b>  | Elementary<br><b>E</b>    | Not<br>submitted |
| Extended essay | Excellent<br><b>A</b>    | 3                         | 3                     | 2                        | 2                     | 1 + Failing<br>condition* | N                |
|                | Good<br><b>B</b>         | 3                         | 2                     | 1                        | 1                     | Failing<br>condition*     | N                |
|                | Satisfactory<br><b>C</b> | 2                         | 1                     | 1                        | 0                     | Failing<br>condition*     | N                |
|                | Mediocre<br><b>D</b>     | 2                         | 1                     | 0                        | 0                     | Failing<br>condition*     | N                |
|                | Elementary<br><b>E</b>   | 1 + Failing<br>condition* | Failing<br>condition* | Failing<br>condition*    | Failing<br>condition* | Failing<br>condition*     | N                |
|                | Not<br>submitted         | N                         | N                     | N                        | N                     | N                         | N                |

A student who, for example, writes a **good** extended essay and whose performance in theory of knowledge is judged to be **satisfactory** will be awarded 1 point, while a student who writes a **mediocre** extended essay and whose performance in theory of knowledge is judged to be **excellent** will be awarded 2 points.

A student who fails to submit an extended essay will be awarded N for the extended essay, will score no points, and will not be awarded a diploma.

Performance in both the extended essay and theory of knowledge of an **elementary** standard is a failing condition for the award of the diploma.

\* From 2010 onwards, 28 points overall will be required to be eligible for the diploma if a student attains an “E” grade in either the extended essay or theory of knowledge. As previously, a grade “A” in one of the requirements earns an extra point even if the other is a grade “E”. Attaining a grade “E” in both the extended essay and theory of knowledge continues to represent an automatic failure.

## Assessment criteria

This section provides an overview of what each criterion assesses in the extended essay. Further advice on interpreting the assessment criteria is provided within the guidelines for each subject in the “Details—subject specific” section.

### A: research question

(Objectives 1 and 2)

This criterion assesses the extent to which the purpose of the essay is specified. In many subjects, the aim of the essay will normally be expressed as a question and, therefore, this criterion is called the “research question”. However, certain disciplines may permit or encourage different ways of formulating the research task.

| Achievement level | Descriptor  |
|-------------------|---|
| 0                 | The research question is not stated in either the introduction or on the title page <b>or</b> does not lend itself to a systematic investigation in an extended essay in the subject in which it is registered. |

|   |   |
|---|---|
| 1 | The research question is stated in either the introduction or on the title page but is not clearly expressed <b>or</b> is too broad in scope to be treated effectively within the word limit. |
| 2 | The research question is clearly stated in either the introduction or on the title page and is sharply focused, making effective treatment possible within the word limit.                    |

## B: introduction

(Objectives 1 and 5)

This criterion assesses the extent to which the introduction makes clear how the research question relates to existing knowledge on the topic and explains how the topic chosen is significant and worthy of investigation.

| Achievement level | Descriptor  |
|-------------------|---|
| 0                 | Little or no attempt is made to set the research question into context. There is little or no attempt to explain the significance of the topic.                       |
| 1                 | Some attempt is made to set the research question into context. There is some attempt to explain the significance of the topic and why it is worthy of investigation. |
| 2                 | The context of the research question is clearly demonstrated. The introduction clearly explains the significance of the topic and why it is worthy of investigation.  |

## C: investigation

(Objectives 1 and 3)

This criterion assesses the extent to which the investigation is planned and an appropriate range of sources has been consulted, or data has been gathered, that is relevant to the research question. Where the research question does not lend itself to a systematic investigation in the subject in which the essay is registered, the maximum level that can be awarded for this criterion is 2.

| Achievement level | Descriptor   |
|-------------------|--|
| 0                 | There is little or no evidence that sources have been consulted or data gathered, and little or no evidence of planning in the investigation.  |
| 1                 | A range of inappropriate sources has been consulted, or inappropriate data has been gathered, and there is little evidence that the investigation has been planned.                          |
| 2                 | A limited range of appropriate sources has been consulted, or data has been gathered, and some relevant material has been selected. There is evidence of some planning in the investigation. |
| 3                 | A sufficient range of appropriate sources has been consulted, or data has been gathered, and relevant material has been selected. The investigation has been satisfactorily planned.         |
| 4                 | An imaginative range of appropriate sources has been consulted, or data has been gathered, and relevant material has been carefully selected. The investigation has been well planned.       |

## D: knowledge and understanding of the topic studied

(Objectives 3 and 7)

Where the research question does not lend itself to a systematic investigation in the subject in which the essay is registered, the maximum level that can be awarded for this criterion is 2. “Academic context”, as used in this guide, can be defined as the current state of the field of study under investigation. However, this is to be understood in relation to what can reasonably be expected of a pre-university student. For example, to obtain a level 4, it would be sufficient to relate the investigation to the principal lines of inquiry in the relevant field; detailed, comprehensive knowledge is not required.

| Achievement level | Descriptor  |
|-------------------|---|
| 0                 | The essay demonstrates no real knowledge or understanding of the topic studied.   |
| 1                 | The essay demonstrates some knowledge but little understanding of the topic studied. The essay shows little awareness of an academic context for the investigation.                       |
| 2                 | The essay demonstrates an adequate knowledge and some understanding of the topic studied. The essay shows some awareness of an academic context for the investigation.                    |
| 3                 | The essay demonstrates a good knowledge and understanding of the topic studied. Where appropriate, the essay successfully outlines an academic context for the investigation.             |
| 4                 | The essay demonstrates a very good knowledge and understanding of the topic studied. Where appropriate, the essay clearly and precisely locates the investigation in an academic context. |

## E: reasoned argument

(Objectives 1 and 4)

This criterion assesses the extent to which the essay uses the material collected to present ideas in a logical and coherent manner, and develops a reasoned argument in relation to the research question. Where the research question does not lend itself to a systematic investigation in the subject in which the essay is registered, the maximum level that can be awarded for this criterion is 2.

| Achievement level | Descriptor   |
|-------------------|--|
| 0                 | There is no attempt to develop a reasoned argument in relation to the research question.   |
| 1                 | There is a limited or superficial attempt to present ideas in a logical and coherent manner, and to develop a reasoned argument in relation to the research question.                    |
| 2                 | There is some attempt to present ideas in a logical and coherent manner, and to develop a reasoned argument in relation to the research question, but this is only partially successful. |
| 3                 | Ideas are presented in a logical and coherent manner, and a reasoned argument is developed in relation to the research question, but with some weaknesses.                               |
| 4                 | Ideas are presented clearly and in a logical and coherent manner. The essay succeeds in developing a reasoned and convincing argument in relation to the research question.              |

## F: application of analytical and evaluative skills appropriate to the subject

(Objective 7)

| Achievement level | Descriptor   |
|-------------------|--|
| 0                 | The essay shows no application of appropriate analytical and evaluative skills.  |
| 1                 | The essay shows little application of appropriate analytical and evaluative skills.                                      |
| 2                 | The essay shows some application of appropriate analytical and evaluative skills, which may be only partially effective. |
| 3                 | The essay shows sound application of appropriate analytical and evaluative skills.                                       |
| 4                 | The essay shows effective and sophisticated application of appropriate analytical and evaluative skills.                 |

## G: use of language appropriate to the subject

(Objective 6)

| Achievement level | Descriptor   |
|-------------------|--|
| 0                 | The language used is inaccurate and unclear. There is no effective use of terminology appropriate to the subject.  |
| 1                 | The language used sometimes communicates clearly but does not do so consistently. The use of terminology appropriate to the subject is only partly accurate. |
| 2                 | The language used for the most part communicates clearly. The use of terminology appropriate to the subject is usually accurate.                             |
| 3                 | The language used communicates clearly. The use of terminology appropriate to the subject is accurate, although there may be occasional lapses.              |
| 4                 | The language used communicates clearly and precisely. Terminology appropriate to the subject is used accurately, with skill and understanding.               |

## H: conclusion

(Objectives 1, 4 and 5)

This criterion assesses the extent to which the essay incorporates a conclusion that is relevant to the research question and is consistent with the evidence presented in the essay.

| Achievement level | Descriptor   |
|-------------------|--|
| 0                 | Little or no attempt is made to provide a conclusion that is relevant to the research question.  |
| 1                 | A conclusion is attempted that is relevant to the research question but may not be entirely consistent with the evidence presented in the essay. |

|   |  |
|---|--|
| 2 | An effective conclusion is clearly stated; it is relevant to the research question and consistent with the evidence presented in the essay. It should include unresolved questions where appropriate to the subject concerned. |
|---|--|

## I: formal presentation

(Objective 5)

This criterion assesses the extent to which the layout, organization, appearance and formal elements of the essay consistently follow a standard format. The formal elements are: title page, table of contents, page numbers, illustrative material, quotations, documentation (including references, citations and bibliography) and appendices (if used).

| Achievement level | Descriptor   |
|-------------------|--|
| 0                 | The formal presentation is unacceptable, or the essay exceeds 4,000 words. |
| 1                 | The formal presentation is poor.   |
| 2                 | The formal presentation is satisfactory.                                   |
| 3                 | The formal presentation is good.   |
| 4                 | The formal presentation is excellent.                                      |

## J: abstract

(Objective 5)

The requirements for the abstract are for it to state clearly the research question that was investigated, how the investigation was undertaken and the conclusion(s) of the essay.

| Achievement level | Descriptor  |
|-------------------|---|
| 0                 | The abstract exceeds 300 words <b>or</b> one or more of the required elements of an abstract (listed above) is missing. |
| 1                 | The abstract contains the elements listed above but they are not all clearly stated.                                    |
| 2                 | The abstract clearly states all the elements listed above.  |

## K: holistic judgment

(Objective 1)

The purpose of this criterion is to assess the qualities that distinguish an essay from the average, such as intellectual initiative, depth of understanding and insight. While these qualities will be clearly present in the best work, less successful essays may also show some evidence of them and should be rewarded under this criterion.

| Achievement level | Descriptor   |
|-------------------|--|
| 0                 | The essay shows no evidence of such qualities.     |
| 1                 | The essay shows little evidence of such qualities. |



|   |  |
|---|--|
| 2 | The essay shows some evidence of such qualities.         |
| 3 | The essay shows clear evidence of such qualities.        |
| 4 | The essay shows considerable evidence of such qualities. |

## Regulations

The *General regulations: Diploma Programme* states that, in addition to subject requirements, the IB diploma has additional requirements that include the completion and submission of an extended essay in a subject available for this purpose. These general regulations also state that schools must comply with the details and procedures in the *Handbook of procedures for the Diploma Programme* (the procedures manual for Diploma Programme coordinators and teachers), which gives detailed information about the administration of this diploma requirement.

### The requirement

Every IB diploma student must submit an extended essay. Extended essays may only be submitted by students in the “diploma” or “retake” categories. Students in the “retake” category may submit either a new extended essay for assessment, registered in the same or a different subject, or a revised extended essay.

### Supervision

It is the school’s responsibility to ensure that each student submitting an extended essay is supervised by a teacher at the school where the student is registered for Diploma Programme examinations. The teacher must have appropriate qualifications and/or experience in the subject chosen by the student, and must be familiar with the Diploma Programme. The teacher who is supervising a student’s work on his or her extended essay, known as “the supervisor”, must not be related to the student.

### Language in which the extended essay is written

Extended essays submitted in a group 1 or group 2 language must be written in that language, with the exception of Latin and classical Greek. Extended essays for subjects in groups 3 to 6, and in Latin and classical Greek, must be written in English, French or Spanish.

### Academic honesty

The student is ultimately responsible for ensuring that his or her extended essay is authentic, with the work or ideas of others fully and correctly acknowledged. Additionally, it is the responsibility of a supervisor to confirm that, for each student he or she has supervised, to the best of his or her knowledge, the version of the extended essay submitted for assessment is the authentic work of the student.

Both plagiarism and collusion are forms of malpractice that incur a penalty. The same piece of work, or two versions of the same work, cannot be submitted to meet the requirements of both the extended essay and another assessment component of a subject contributing to the diploma or an additional certificate.

### Choice of subject

The Diploma Programme subject chosen for the extended essay does not have to be one of the subjects being studied by the student for his or her diploma. The list of available subjects, including groups 1 and 2, is given in the *Vade Mecum*. Extended essays cannot be submitted in theory of knowledge, school-based syllabuses and pilot subjects, with exceptions for the latter two categories listed in the *Handbook of procedures for the Diploma Programme*.

# Group 1

These subject guidelines should be read in conjunction with the “Introduction”, “Outline” and “Details—all essays” sections of this guide.

## Overview

A group 1 extended essay is intended for students who are writing in their best language (that is, students who could offer the language in question as a language A). The essay must be written in the language for which it is registered. Students studying a group 2 language who are interested in writing about the literature of that language should read the “Group 2” section. It is intended that students should not submit a group 1 extended essay in their group 2 language.

There are 3 categories of group 1 extended essays:

- Category 1—Studies of a literary work(s) originally written in the language in which the essay is presented
- Category 2—Studies of a literary work(s) originally written in the language of the essay compared with literary work(s) originally written in another language
- Category 3—Studies in language.

Students should put the category in which they have presented their essay alongside the subject in which it is registered on the cover sheet of the extended essay, for example, English A Cat: 2; German A Cat : 3; Spanish A Cat : 1.

A group 1 extended essay in categories 1 and 2 in literature provides students with an opportunity to:

- study in-depth a literary topic that is suitable in nature and scope for discussion in this form
- engage in independent literary criticism and include, where appropriate, established critical comment
- develop the ability to put forward their views persuasively and in a well-structured manner, using a register appropriate to the study of literature.

A group 1 extended essay in Category 3—Studies in language provides students with an opportunity to:

- develop skills of textual analysis by considering how language, culture, and context influence the ways in which meaning is constructed in texts
- think critically about the different interactions which exist between texts, audiences, and purposes
- develop the ability to convey views persuasively and in a well-structured manner, using an appropriate academic register.

## Choice of topic

### Categories 1 and 2: Literature

The extended essay may relate to work studied in class but students must take care in all cases to demonstrate relevant wider reading and individual study.

Appropriate literary works may be chosen from any source including the IB Diploma Programme prescribed list of authors. Most importantly, texts should be of sufficient literary merit to enable the student to develop sustained literary analysis.

**Category 1: Studies of a literary work(s) originally written in the language in which the essay is presented**

The essay must be based on the literature of countries where the language is spoken (that is, all works discussed will originally have been written in the language of the essay).

The following five examples of research questions for group 1, category 1 extended essays are intended as guidance only.

|                   |   |
|-------------------|---|
| <b>Language</b>   | <b>English</b>  |
| Topic             | Dance in Jane Austen’s novels   |
| Research question | “What are the role and the significance of dance in <i>Pride and Prejudice</i> and <i>Emma</i> ?” |
| <b>Language</b>   | <b>English</b>  |
| Topic             | Death in Emily Brontë’s and Emily Dickinson’s poetry  |
| Research question | “How is the subject of death treated in selected poems by Emily Brontë and Emily Dickinson?”      |
| <b>Language</b>   | <b>French</b>   |
| Topic             | Fiction and history in Blaise Cendrars’ <i>L’Or</i>   |
| Research question | “How and why does Cendrars modify facts and rewrite history in his first novel?”                  |
| <b>Language</b>   | <b>Danish</b>   |
| Topic             | The presentation of nature in poetry  |
| Research question | “Perceptions of nature in Danish poetry of the 1890s.”  |
| <b>Language</b>   | <b>Italian</b>  |
| Topic             | Imagery and themes in the work of Giovanni Pascoli  |
| Research question | “The theme of the nest in the poetry of Giovanni Pascoli.”  |

**Category 2: Studies of a literary work(s) originally written in the language of the essay compared with a literary work(s) originally written in another language**

The essay must be a comparison of at least one literary work originally written in the language of the essay with a literary work or works originally written in a different language to that of the essay and studied in translation.

The following three examples of research questions for group 1 category 2 extended essays are intended as guidance only.

|                   |   |
|-------------------|---|
| <b>Language</b>   | <b>English/French/German</b>  |
| Topic             | The presentation of the hero in literature  |
| Research question | “In what different ways do Shaw, Anouilh and Schiller present Joan of Arc in their respective plays?” |

|                   |  |
|-------------------|--|
| <b>Language</b>   | <b>French/Russian</b>  |
| Topic             | Male authors and female characters   |
| Research question | In what ways do the male authors of <i>Anna Karenina</i> and <i>Madame Bovary</i> seek to render their heroines sympathetic to the reader? How far do they succeed?" |
| <b>Language</b>   | <b>Italian/English</b>   |
| Topic             | The use of literary tradition  |
| Research question | "Themes and stylistic devices from Dante in T.S. Eliot's <i>The Waste Land</i> and <i>Four Quartets</i> ."   |

The topic chosen must be **literary** in nature and could be about a particular aspect, or be a comparative study of a work or works, author, period or genre.

The following examples of titles for group 1 literature extended essays are intended as guidance only. The pairings illustrate that focused topics (indicated by the first title) should be encouraged rather than broad topics (indicated by the second title).

English: "Religious imagery in *Wuthering Heights*" **is better than** "Religion in the Brontës".

English: "A comparison of the presentation of racial conflict in one work by James Baldwin and one work by Richard Wright" **is better than** "Racial conflict in the works of American writers".

French: "The portrayal of women in the works of Zola" is better than "The works of Zola".

French: "Existentialism in *Les Mains Sales* and *Les Mouches* by Sartre" **is better than** "What is existentialism?"

Spanish: "The treatment of social conflict in *La Busca* by Pío Baroja" **is better than** "Social conflict in modern literature".

### Category 3: Studies in language

Where appropriate, students may compare and contrast different languages and cultures. However, the main focus of category 3 extended essays should be on the language and culture(s) of the language in which the extended essay is written.

Category 3 extended essays emphasize the production and reception of texts in cultural contexts, and essays of a general cultural nature are not appropriate. They must involve close textual analysis. It is emphasized that texts are constructed and understood in specific cultural and historical contexts; meaning may be contested.

The examples given below are, apart from example 7, specific to a particular language due to the importance of constructing a precise research question. However, these examples may also be appropriate as an area of study in another language and context. The following seven examples of research questions for group 1, category 3 extended essays are intended as guidance only.

### Examples 1, 2 and 3: Language in a cultural context

Students have the opportunity to explore how language develops in specific cultural contexts, how it impacts on the world, and the ways in which language shapes both individual and group identity.

|                    |  |
|--------------------|--|
| <b>1. Language</b> | <b>English/French/German</b>                                   |
| Topic              | The impact of electronic communication technologies on meaning |

|                    |  |
|--------------------|--|
| Research question  | An analysis of the development and implications of “Twitter” reactions to the 2010 election campaign in Britain. |
| <b>2. Language</b> | <b>English</b>   |
| Topic              | The use of persuasive language in political speeches   |
| Research question  | How far does the use of rhetoric in Barack Obama’s speeches increase their effectiveness?                        |
| <b>3. Language</b> | <b>French</b>  |
| Topic              | The use of persuasive language in political speeches   |
| Research question  | How, and to what extent, did De Gaulle’s rhetorical strategies change over time in his political speeches?       |

**Examples 4, 5, 6 and 7: Language and mass communication**

Students are able to consider the way language is used in the media, and may address how the production and reception of texts is influenced by the medium in which they are written.

|                    |  |
|--------------------|--|
| <b>4. Language</b> | <b>German</b>  |
| Topic              | News coverage  |
| Research question  | How were the views taken by different groups in support of Greece during its financial crisis of 2010, constructed in the German popular press?  |
| <b>5. Language</b> | <b>Spanish</b>   |
| Topic              | News coverage  |
| Research question  | How has the Spanish print media portrayed illegal immigration from Africa into Spain since 2005?   |
| <b>6. Language</b> | <b>Chinese</b>   |
| Topic              | Advertising  |
| Research question  | How does Chinese advertising of luxury goods use language and image to construct a particular view of the West?  |
| <b>7. Language</b> | <b>Any appropriate language</b>  |
| Topic              | Public information   |
| Research question  | How does the use of startling visual imagery in a public health information campaign (on smoking, for example) function, and what does it reveal about prevailing cultural ideas of the body and health? |

## Treatment of the topic

**Categories 1 and 2–Literature:** literary works often address, for example, philosophical, political or social questions. However, the major focus of the essay should be the literary treatment of such questions. The literary works should not be a pretext for interdisciplinary study and should not be treated simply as documentary evidence in a discussion of philosophical, political or social issues. Students should always consider how the texts work as literature, dealing with aspects such as the effects they achieve, the devices they use and the way they are written.

Students should not use the extended essay solely as a vehicle for their own thoughts but, after providing careful analysis of the author's ideas, should present their personal views on the way the author has treated the subject. There should be a compromise between building on the wisdom of more experienced critics and introducing new personal elements. The mere reiteration of the views of established literary critics will not result in a successful extended essay.

Essays that attempt to interpret literary works as reflections of the writer's life are rarely successful, tending to produce reductive readings based on second-hand information. Biographical topics should thus usually be avoided.

**Category 3–Studies in language:** whatever area of language study the student chooses for their extended essay they will need to give focused and critical attention to the text or texts being considered. This close analysis must be integrated into a wider discussion of the contexts in which the text or texts are produced and understood.

Students are encouraged to adopt an analytical, critical position, and to show awareness of potentially conflicting viewpoints on texts and their meaning in a wider social context. Straightforward descriptive essays are inappropriate. Students should aim to be balanced, argue coherently, and present relevant supporting examples.

Students should develop a focused and manageable research question, approaching it critically and independently.

### Texts

The term 'text' for the purpose of a category 3 language extended essay is defined to include the widest range of oral, written and visual materials present in society. This range will include:

- single and multiple images with or without written text
- literary written texts and text extracts
- media texts, for example films, radio and television programmes and their scripts
- electronic texts that share aspects of a number of media texts, for example, video sharing websites, web pages, sms messages, blogs, wikis and tweets.
- oral texts will include readings, speeches, broadcasts and transcriptions of recorded conversation.

When writing the essay, students must bear in mind that any narrative and/or descriptive material included should be directly relevant to the critical analysis. A précis of the student's reading is not sufficient.

## Interpreting the assessment criteria

### Criterion A: research question

For all three categories of group 1 essays, although the research question can best be expressed in the form of a question, it may also be presented as a statement or proposition for discussion.

The research question must:

- be specific and sharply focused
- be stated clearly in the introduction of the essay or on the title page

- be related to the target literature/language.

The research question must not:

- be too narrow or too obvious.

### **Criterion B: introduction**

For categories 1 and 2 literature essays, the context should be established succinctly and should not be an excuse for padding out an essay with a lengthy account of the historical or biographical context of a literary text. Instead, the introduction should focus on the student's choice of research question and include an explanation as to why they made that choice. In some cases, students may be able to say how it relates to existing knowledge on the topic but, since they cannot be expected to know the whole range of secondary writing on major texts, it is sufficient for them to state briefly why they have chosen their particular research question and what they think it has to offer.

For category 3 language essays, the introduction of the essay should be brief. It should focus on the research question and how it relates to existing knowledge of the subject. The introduction should make clear how the chosen topic is specific or of special interest to the target language and culture(s).

### **Criterion C: investigation**

For categories 1 and 2 literature essays, the range of resources includes, in the first place, the primary texts being studied (and, possibly, other writings by the author(s) in question, such as essays, journals and letters) and, less importantly, secondary sources such as published criticism on those texts. The correct planning of an essay should involve interrogating secondary sources in light of the research question, so that the views of critics are used to support the student's own argument, and not as a substitute for that argument. It may thus be helpful for a student to challenge a statement by a critic instead of simply agreeing with it. In a literary context, the data gathered is principally the evidence the student finds in the primary text(s) to support the argument of the essay. If students make use of internet-based sources, they should do so critically and circumspectly in full awareness of their potential unreliability.

For category 3 language essays, an extended essay in language presupposes a close and critical consideration of a primary text or texts (where the term "text" is broadly defined; see above). Such texts should be authentic, clearly identified, and appropriate to the language and culture(s) of the extended essay. Secondary sources will be used to provide a framework for critical analysis of primary texts, eliciting how language, culture, and context impact on the construction of meaning. Students should aim to develop their own argument, rather than simply adopting the views of critics. Students are also encouraged to take a critical perspective on secondary sources. If students make use of internet-based sources, they should do so critically and circumspectly in full awareness of their potential unreliability.

### **Criterion D: knowledge and understanding of the topic studied**

For categories 1 and 2 literature essays, the topic studied here is principally the primary text(s) that is/are the focus of the essay. The quality of the student's understanding of the primary text(s) is the main concern. The use of secondary sources is not an essential requirement: this may be helpful in the case of classic texts, enabling discussion to start at a higher level, but it should not replace the student's personal engagement with the primary text(s).

For category 3 language essays, the topic studied is a primary text or texts, explored and understood through a critical consideration of its culturally specific production and reception. Students should move between analysis of the linguistic features of a primary text or texts and the social and cultural circumstances in which it is produced and understood. In this way, knowledge and understanding are revealed through the way a student is able to understand and situate a text or texts in its cultural context. Students should demonstrate an awareness of meaning as a constructed and often contested entity.

### **Criterion E: reasoned argument**

For all three categories of group 1 essays, students should be aware of the need to give their essays the backbone of a developing argument. Personal views should not simply be stated but need to be supported by reasoned argument to persuade the reader of their validity.

For categories 1 and 2 literature essays, a straightforward description of a literary text through plot summary or narration of the action does not usually advance an argument and should generally be avoided (although, where a little-known text is under discussion, a brief description may be appropriate).

For category 3 language essays, straightforward descriptive or narrative accounts of a text or texts that lack critical analysis do not usually advance an argument and should be avoided.

### **Criterion F: application of analytical and evaluative skills appropriate to the subject**

For all three categories of group 1 essays, appropriate application of analytical and evaluative skills is the use of persuasive analysis and argument to support a personal interpretation. Second-hand interpretations that are derived solely from secondary sources will lose marks under this criterion, as will purely descriptive essays that list examples of literary (categories 1 and 2) and language (category 3) motifs but fail to critically analyse them.

### **Criterion G: use of language appropriate to the subject**

For all three categories of group 1 essays, there is no single acceptable style for essays, which may be well-written in different ways—with, for example, different degrees of personal emphasis, some writers using the first person and others preferring a more impersonal mode of expression. Clarity and precision of communication in a group 1 essay includes the correct use of language.

### **Criterion H: conclusion**

For all three categories of group 1 essays, “consistent” is the key word here: the conclusion should develop out of the argument and not introduce new or extraneous matter. It should not repeat the material of the introduction; rather, it should present a new synthesis in light of the discussion.

### **Criterion I: formal presentation**

For all three categories of group 1 essays, this criterion refers to the extent to which the essay conforms to academic standards about the way in which research papers should be presented. The presentation of essays that omit a bibliography or do not give references/citations for quotations is deemed unacceptable (level 0). Essays that omit one of the required elements—title page, table of contents, page numbers—are deemed no better than satisfactory (maximum level 2), while essays that omit two of them are deemed poor at best (maximum level 1).

### **Criterion J: abstract**

For all three categories of group 1 essays, the abstract is judged on the clarity with which it presents the three required elements, not on the quality of the research question itself, nor on the quality of the argument or the conclusions.

### **Criterion K: holistic judgment**

For all three categories of group 1 essays, this criterion allows examiners to reward work that shows initiative, creativity and insight, even if the essay does not achieve the highest standard overall. Routine essays on well-worn topics will not score highly under this criterion.

## Group 2

These subject guidelines should be read in conjunction with the “Introduction”, “Outline” and “Details—all essays” sections of this guide.



## Overview

A group 2 extended essay is intended for students who are studying a second modern language. Students may **not** write a group 2 extended essay in a language that they are offering as a language A for their diploma.

There are 3 categories of group 2 extended essays:

- Category 1—Language
- Category 2—Culture and society (a or b)
- Category 3—Literature.

Students should put the category in which they have presented their essay alongside the subject in which it is registered on the cover sheet of the extended essay, for example, English B Cat: 2 (b); German B Cat :3; Spanish B Cat : 1.

A group 2 extended essay provides students with the opportunity to develop their awareness and knowledge of the language studied, and their understanding of the culture concerned. This is achieved by enabling students to pursue their interest in the language through research based on texts (taken to be any meaningful piece of spoken or written language, for example, an article, a book, a play, a poem) or on specific cultural artifacts (such as works of fine art or architecture, films, radio or television programmes, or popular music).

The extended essay must be written in the language for which it is registered (the target language). It must be focused on matters related to the target culture.

The extended essay is a **research essay** and the assessment criteria emphasize the importance of research skills rather than linguistic proficiency. Although a certain level of ability in the language is obviously desirable in order to undertake a group 2 extended essay, fluency is neither a prerequisite nor a guarantee of success. In fact, students who are fluent in the language but who do not demonstrate the required research skills will definitely achieve a lower mark than students who are less fluent but who fulfill the other assessment criteria.

## Choice of topic

As indicated in the “Overview” section, a group 2 extended essay aims to develop students’ knowledge and understanding of the target language and culture. Any proposed topic that will not further that aim should be rejected. The essay should consist of the study of an issue in one of three categories: language, culture and society, or literature. Combinations of these are also permissible. Each category has specific requirements that are described in this section. In addition, students should ensure that their topic:

- is worthy of investigation. For example, “Does tourism have a future in Switzerland?” or “Is the wine industry an important source of income for France?” would be too trivial for an essay of 4,000 words.
- is not too broad and allows for an effective treatment within the word limit. Topics such as “Racism in France”, “The theatre of the absurd”, or “A history of the French language” would need to be given a sharper focus.
- provides them with an opportunity to develop an argument and to demonstrate critical analysis and personal judgment rather than just knowledge. Topics that are merely descriptive or narrative, or that only summarize secondary sources (such as “French cheeses”, “The Provence region”, “The events of May 1968 in Paris”), should be avoided.

In each category the examples given are for guidance only.

### Category 1: language

The essay should be a specific analysis of the language (its use, structure and so on) normally related to its cultural context or a specific text.

|                   |  |
|-------------------|--|
| <b>Language</b>   | <b>French</b>  |
| Topic             | Language laws in Quebec  |
| Research question | To what extent has Bill 101 contributed to increasing the prevalence of the French language in Quebec?   |
| Approach          | An investigation into the effect of Bill 101 on the status of the French language in Quebec.   |
| <b>Language</b>   | <b>Japanese</b>  |
| Topic             | Foreign words ( <i>gairaigo</i> ) in Japanese  |
| Research question | Do young people use more words of foreign origin than older people?  |
| Approach          | A survey of younger people and older people. Results are compared for knowledge of foreign words, frequency of their use and attitude towards their use. |
| <b>Language</b>   | <b>Spanish</b>   |
| Topic             | Alternative use of the forms “vos” and “usted” in the Spanish of the Rio de la Plata (River Plate) region  |
| Research question | To what extent have differences between formal and informal usage disappeared from the language used in the Rio de la Plata region?                      |
| Approach          | An investigation into the language of young people from Buenos Aires in the Rio de la Plata region in a range of communicative situations.               |

### Category 2: culture and society

#### A: essays of a sociocultural nature with an impact on the language

The essay should be an analysis of a cultural nature that describes the impact of a particular issue on the form or use of the language.

|                   |  |
|-------------------|--|
| <b>Language</b>   | <b>French</b>  |
| Topic             | Language and feminism  |
| Research question | Should feminine forms of more job titles be created in French to reflect shifting gender roles?                            |
| Approach          | An examination of the linguistic and sociological arguments for and against the feminization of more job titles in French. |
| <b>Language</b>   | <b>Japanese</b>  |
| Topic             | Language for family members  |
| Research question | Does Japanese need new words to describe non-traditional family relationships as society changes?                          |

|                   |  |
|-------------------|--|
| Approach          | A commentary on how the use of the words "shujin" and "kanai" have changed, together with an examination of the social factors that may require new linguistic terms for family relationships to be created. |
| <b>Language</b>   | <b>Spanish</b>   |
| Topic             | Language and discrimination  |
| Research question | To what extent does the language used by groups of young students from a secondary school in Buenos Aires reflect racial discrimination?   |
| Approach          | A sociolinguistic investigation into the way language used by young people reflects attitudes of discrimination present in contemporary society.   |

**B: essays of a general cultural nature based on specific cultural artifacts**

The essay should be an analysis of a more general cultural nature but specific to a country or community where the language is spoken. Topics that are too broad and could apply to many cultures (like globalization, the death penalty or eating disorders) are inappropriate.

Essays of a general cultural nature must be based on specific cultural artifacts. Cultural artifacts in this context are understood to include a wide variety of phenomena, ranging from works of fine art to newspapers, magazines and cartoons, to films, television programmes and popular music.

|                   |   |
|-------------------|---|
| <b>Language</b>   | <b>French</b>   |
| Topic             | Social criticism in the songs of MC Solaar  |
| Research question | What is the nature of MC Solaar's rap critique of modern French society?  |
| Approach          | An investigation into the thematic content of MC Solaar's songs.  |
| <b>Language</b>   | <b>Japanese</b>   |
| Topic             | Adverts in the Japanese media   |
| Research question | How and why do Japanese advertisers use such a high proportion of non-Japanese models in advertising?   |
| Approach          | An analysis of adverts targeted at the youth market seen over a one-month period, together with an analysis of how these are targeted, and possible reasons why the images used are chosen. |
| <b>Language</b>   | <b>Spanish</b>  |
| Topic             | Representation of women in tango  |
| Research question | Which roles do women play in tango lyrics?  |
| Approach          | A critical and thematic analysis of a corpus of tango lyrics to reveal female roles.  |

**Category 3: literature**

The essay should be an analysis of a literary type, based on a specific work or works of literature exclusively from the target language. In the case of a comparison of texts, **all** texts must originally have been written in the target language.

|                   |  |
|-------------------|--|
| <b>Language</b>   | <b>French</b>  |
| Topic             | Haitian politics as depicted in works by Dany Laferrière and Gary Victor   |
| Research question | Does Dany Laferrière in <i>Pays sans chapeau</i> share the same point of view on Haitian politics as Gary Victor in <i>La Piste des sortilèges</i> ? |
| Approach          | An investigation into the similarities between the ways these two writers treat this theme.  |
| <b>Language</b>   | <b>Japanese</b>  |
| Topic             | Pastoral references in Kenji Miyazawa  |
| Research question | What role does the natural world play in <i>Chumon no ooi ryoriten</i> ?   |
| Approach          | A commentary on the literary devices used by the author, together with the effect these have on the work.  |
| <b>Language</b>   | <b>Spanish</b>   |
| Topic             | Fictionalization of history in Abel Posse's novels   |
| Research question | How does Abel Posse construct an imaginary history in his novel <i>El largo atardecer del caminante</i> ?  |
| Approach          | A textual analysis to reveal the narrative techniques used by the author to make the plot contrast with the order of chronological events.           |

## Treatment of the topic

The student should demonstrate an understanding of the issues raised by the research question and offer an objective, balanced analysis of these issues. The essay must be presented as a coherent argument, supported by relevant examples. Essays that are simply descriptive are unlikely to achieve a high mark.

In the case of an essay of a general cultural nature, the student should focus on, and research, what makes the topic specific and unique to the country or countries concerned. The student may draw relevant comparisons with another culture, if appropriate. However, it is essential that the focus remains on the culture of the language concerned. The purpose of comparisons is to shed light on the specific cultural issues raised by the research question of the essay.

Students may choose to analyse texts in a detailed literary fashion, or they may use literary texts as a means of exploring the target language or its culture and society.

Whenever questionnaires have been used or statistics presented, the student must show an understanding of the results and be able to interpret them with reference to the issue. A copy of any questionnaires or surveys should be included as an appendix.

If photographs and/or illustrations have been used, they should be labelled, explained and justified in the context of the topic.

## Interpreting the assessment criteria

### Criterion A: research question

The research topic can often be best defined in the form of a question. It may, however, also be presented as a statement or proposition for discussion. It must:

- be specific and sharply focused

- be stated clearly early on in the essay
- fit in one of the categories (language, culture and society, or literature), or be a combination of these.

If the topic does not meet the requirements of one of the three possible categories (for example, if an essay of a general cultural nature is not based on specific cultural artifacts), a maximum of level 1 is awarded. If the research question is not related to the target language/culture/literature, level 0 is awarded.

### **Criterion B: introduction**

The introduction of the essay should be brief. It should focus on the research question and how it relates to existing knowledge of the subject. The student's personal experience or particular opinion is rarely relevant here.

For category 1 (language) and category 2 (culture and society) essays, the introduction should make clear how the chosen topic is specific or of special interest to the target culture.

For category 3 (literature) essays, lengthy accounts of the historical or biographical context of a literary text should be avoided, as they usually do not help to explain the significance of a topic in a satisfactory manner.

### **Criterion C: investigation**

Students must use authentic sources, mainly written in the target language. In the case of literature-based essays, all texts must have originally been written in the target language. Literary quotations must also be in the target language of the essay (that is, taken from the original works and not from translations).

Students are encouraged to look critically at the secondary sources that they read. The proper planning of an essay should involve interrogating secondary sources in light of the research question, so that the views of critics are used to support the student's own argument, and not as a substitute for that argument. It may thus be helpful for a student to challenge a statement by a critic instead of simply agreeing with it.

For category 3 (literature) essays, the relevant information to support the argument of the essay should mainly come from the primary text (although consulting a range of secondary sources may also be helpful).

If students make use of Internet-based sources, they should do so critically and circumspectly in full awareness of their potential unreliability.

### **Criterion D: knowledge and understanding of the topic studied**

Students must demonstrate knowledge and understanding of the topic chosen, together with its context: historical, social and cultural, as well as academic.

For category 1 (language) and category 2 (culture and society) essays, this knowledge should be based at least partially on primary sources. (Primary sources are specific cultural artifacts, data and interviews. Secondary sources are textbooks, published criticism, articles and so on.)

For category 3 (literature) essays, the quality of the student's understanding of the primary text(s) is the main concern.

Where the topic of the essay is not related to the target language/culture/literature, level 0 is awarded. Where the topic of the essay is not convincingly related to the target language/culture/literature, level 1 is the maximum that may be awarded.

### **Criterion E: reasoned argument**

Students should be aware of the need to give their essays the backbone of a developing argument. Personal views should not simply be stated but need to be supported by reasoned argument to persuade the reader of their validity.

For category 1 (language) and category 2 (culture and society) essays, a mere compilation of facts or a description of events does not suffice.

For category 3 (literature) essays, students should be aware that straightforward description of a literary text through plot summary or narration of the action does not usually advance an argument and should generally be avoided (although, where a little-known text is under discussion, a brief description may be appropriate).

**Criterion F: application of analytical and evaluative skills appropriate to the subject**

Appropriate application of analytical and evaluative skills here is the use of persuasive analysis and argument to support a personal interpretation or point of view. Second-hand interpretations or viewpoints that are derived solely from secondary sources will lose marks under this criterion, as will purely descriptive or narrative essays.

**Criterion G: use of language appropriate to the subject**

Clarity and precision of communication in group 2 essays includes the correct use of vocabulary, sentence structure and grammar, as well as the selection of an appropriate register and style.

There is no single acceptable style for essays. They may be written with, for example, different degrees of personal emphasis, some writers using the first person and others preferring a more impersonal mode of communication. Whether a style is appropriate or not depends on the common practice in each different language or culture.

**Criterion H: conclusion**

“Consistent” is the key word here: the conclusion should develop out of the argument and not introduce new or extraneous matter. It should not repeat the material of the introduction; rather, it should present a new synthesis in light of the discussion.

**Criterion I: formal presentation**

This criterion relates to the extent to which the essay conforms to academic standards about the way in which research papers should be presented. The presentation of essays that omit a bibliography or that do not give references for quotations is deemed unacceptable (level 0). Essays that omit one of the required elements—title page, table of contents, page numbers—are deemed no better than satisfactory (maximum level 2), while essays that omit two of them are deemed poor at best (maximum level 1).

**Criterion J: abstract**

The abstract is judged on the clarity with which it presents an overview of the research and the essay, not on the quality of the research question itself, nor on the quality of the argument or the conclusions.

The abstract should be written in the language of the extended essay. Elements such as personal information about the student and his or her reasons for choosing the topic should not be included in the abstract.

**Criterion K: holistic judgment**

Qualities that are rewarded under this criterion include the following.

- Intellectual initiative: Ways of demonstrating this in group 2 essays include the choice of topic and research question, and locating and using a wide range of sources, including some that may have been little used previously or generated for the study (for instance, transcripts of oral interviews).
- Insight and depth of understanding: These are most likely to be demonstrated as a consequence of detailed research, reflection that is thorough and well informed, and reasoned argument that consistently and effectively addresses the research question.
- Creativity: In group 2 essays, this includes qualities such as inventive approaches to linguistic, cultural or literary analysis, and new approaches to popular topics.

# Biology

These subject guidelines should be read in conjunction with the “Introduction”, “Outline” and “Details—all essays” sections of this guide.

## Overview

An extended essay in biology provides students with an opportunity to apply a range of skills while researching a topic of personal interest in the field of biology. The nature of an extended essay in biology is characterized by a particular biological emphasis within the more general context of a scientific investigation.

## Choice of topic

It is important that the extended essay has a clear biological emphasis and is not more closely related to another subject. Biology is the science that deals with living organisms and life processes. A biology extended essay should, therefore, incorporate biological theory and emphasize the essential nature of this subject.

Although similar assessment criteria apply to all extended essays in the experimental sciences, for a biology extended essay, the topic chosen must allow an approach that distinctly relates to biology. Where a topic can be approached from different viewpoints, the treatment of the material must be clearly biological. For example, an extended essay in an interdisciplinary area such as biochemistry will, if registered as a biology extended essay, be judged on its biological content, not its chemical content.

Essays that deal with human diseases represent a particular case in point, as these can often be dealt with from a number of perspectives (such as biological, medical, social or economic). In particular, such essays should avoid an overly medical treatment and should focus on biological aspects of the disease rather than on diagnosis and treatment.

Some topics are unsuitable for investigation because of ethical issues. Investigations that are based on experiments likely to inflict pain on, or cause unnecessary stress to, living organisms are not appropriate for submission. Investigations that are likely to have a harmful effect on health (for example, culturing micro-organisms at or near body temperature), or those which may involve access to, or publication of, confidential medical information, are also not appropriate.

Some topics may be unsuitable for investigation because of safety issues. Experiments in which the student uses toxic or dangerous chemicals, carcinogenic substances or radioactive materials should be avoided unless adequate safety apparatus and qualified supervision are available. Other topics may be unsuitable because the outcome is already well known and documented in standard textbooks.

The following examples of titles for biology extended essays are intended as guidance only. The pairings illustrate that focused topics (indicated by the first title) should be encouraged rather than broad topics (indicated by the second title).

- “The effect of detergent toxicity on soil bacteria” **is better than** “Detergents in the environment”.
- “A study of malnourished children in Indonesia and the extent of their recovery after a period of supervised improved nutrition” **is better than** “Malnutrition in children”.
- “A study of the effect of differing pH levels on the growth of *Phaseolus vulgaris*” **is better than** “The effect of acidity on plant growth”.
- “The competitive and evolutionary nature of the symbiotic relationship in *Paramecium bursaria*” **is better than** “Symbiosis in animals”.

- “The effect of banana peel on seed germination” **is better than** “Factors that affect the germination of seeds”.
- “Gel electrophoresis: The construction of an apparatus and the separation of proteins in heat-treated cow’s milk” **is better than** “Uses of the gel electrophoresis technique”.

The topic chosen for study should be presented in the form of a research question, followed by a statement of intent outlining the research approach to be used in answering the question. In this way, the approach to the topic chosen may be even further clarified. Some examples of this could be the following.

|                   |   |
|-------------------|---|
| <b>Topic</b>      | <b>The distribution and growth of lichens on urban pavements</b>  |
| Research question | How are the distribution and growth of lichens affected by sulfur dioxide and ozone levels in the atmosphere?   |
| Approach          | Thalus diameter and population density data is collected from selected sites in different parts of the city. This data is then correlated with published data on the levels of SO <sub>2</sub> and O <sub>3</sub> .   |
| <b>Topic</b>      | <b>The effectiveness of commercial antibacterial cleaning agents</b>  |
| Research question | Are commercially available antibacterial cleaning agents effective at controlling the growth of <i>E. coli</i> on nutrient agar under laboratory conditions?  |
| Approach          | Pure strain <i>E. coli</i> are grown on nutrient agar plates under controlled conditions. Filter paper discs soaked in samples of the antibacterial agents are placed on the agar plates and the zone of exclusion is measured and compared.  |
| <b>Topic</b>      | <b>Altitude and physical fitness</b>  |
| Research question | Can a programme of training at high altitude have an impact on the fitness of an athlete?   |
| Approach          | Using a digital heart-rate monitor, pre- and post-exercise heart rates and recovery times are measured for four athletes. These athletes then carry out a programme of training at 2,500 metres above sea level, after which heart-rate and recovery time data is once again collected. The pre- and post-training data is analysed and compared to published data. |
| <b>Topic</b>      | <b>Urease from soy beans</b>  |
| Research question | Which method of extraction and which temperature conditions give the best levels of urease activity?  |
| Approach          | The enzyme is extracted from dried soy beans using three different methods, and the activity of the extract is measured and compared to a standard. Urease activity is measured by noting the time taken for a standard urea solution, with phenolphthaline indicator, to turn pink in the presence of the enzyme extract.  |

## Treatment of the topic

Students should point out early in the essay how the research question was arrived at and, if appropriate, how it was narrowed down, by briefly outlining related aspects that are not being considered in the essay. Students should be encouraged to formulate one or more hypotheses based on the research question. A single well-formulated question may give rise to a small number of precise hypotheses.

Essays in biology may be based on data collected by the student through experimentation, survey, microscopic observations, biological drawing, fieldwork or some other appropriate biological approach. Alternatively, essays



may be based on data or information obtained from literature, ideally from primary sources, and manipulated or analysed in an original way by the student. Essays that simply restate facts or data taken directly from the sources are of little value. Whichever approach is chosen, the student must ensure that sufficient resources, in the form of data and information, can be obtained in order to allow the topic to be effectively researched.

Essays that involve practical work carried out in the laboratory, or fieldwork, should include a clear and concise description of the experimental procedure. Students should attempt to specify how the research approach and methodology were decided, and show any approaches that were considered and rejected. Ideally, students should carry out the research for the essay solely under the direction of a school supervisor. Some of the best essays have been written by students investigating relatively simple phenomena using standard school apparatus, and this approach is to be encouraged. Regardless of where, or under what circumstances, the research is carried out, students must provide evidence in the essay of their personal contribution to the research approach and to the selection of the methods used. Essays based on research carried out by the student at a research institute or university, under the guidance of an external supervisor, must be accompanied by a covering letter outlining the nature of the supervision and the level of guidance provided.

Generating and presenting data should not be an end in itself; analysis using appropriate scientific techniques is essential. The main body of the essay should consist of an argument or evaluation based on the data or information presented. Here, the student should point out the significance of any graphs, tables or diagrams. Since this is often the longest single section of the essay, it is essential that it is well structured and has an obvious logical progression. A clear structure can be imposed on this section by dividing it into numbered and headed paragraphs. This evaluation should show an understanding of the results and an appreciation of their significance in light of the literature that has been consulted.

Students should provide some explanation of anomalies or unexpected outcomes but this should not form a major part of the discussion. If necessary, modifications to hypotheses presented earlier in the essay should be proposed and a research approach for testing these should be suggested. Some assessment of the outcomes of the research in a future or wider context should be made.

Students must be encouraged to undertake a critical evaluation of the work they have done. In this analysis, the student should describe and explain the limitations imposed on the research by factors such as the suitability and reliability of the sources accessed, accuracy and precision of measuring equipment, sample size, validity and reliability of statistics. Biological limitations should be considered, such as those arising from the problem of repeatability and control when using living material, as well as the difficulties of generalizing from research based on a single type of organism or environment.

## Interpreting the assessment criteria

### Criterion A: research question

In a biology extended essay, the research question is best stated in the form of a question. The research question should not be understood as a statement of the topic but rather as a precisely formulated question that the research will attempt to answer. For example, a statement of the topic of an essay might be “Factors that affect bacterial growth in agar plate cultures”; the research question based on this topic could be “How are the growth rates of three strains of *E. coli* affected by temperature?”. The research question can then be used to formulate a hypothesis, or hypotheses, which can be tested. The research question should be identified clearly and set out prominently in the introduction. A broad statement of the topic of the essay or a statement of the hypothesis is **not sufficient** on its own to meet the requirement for a research question in a biology extended essay.

### Criterion B: introduction

The purpose of the introduction is to set the research question into context. It is usually appropriate to include the general background biological theory required to understand how the research question has arisen. Students are

not expected to explain basic biology forming part of the Diploma Programme biology course, but they are expected to be able to show that they fully understand it and can apply it correctly. Some research questions may require background from other disciplines. This should be kept to a minimum, as the essay will be judged on its biological content.

### **Criterion C: investigation**

The way in which the investigation is written will depend very much on whether or not the essay is based on experimental work performed by the student. For essays that are based on data taken from written sources, the student should explain clearly how the data has been selected and should comment on its reliability. For experimental work, sufficient information on the methodology should be provided to allow the work to be repeated. Students should demonstrate that they understand the theory behind any techniques or apparatus used. They are also expected to show an awareness of any limitations or uncertainties inherent in their techniques and apparatus.

### **Criterion D: knowledge and understanding of the topic studied**

A biology extended essay should be based on specific, relevant and clearly defined aspects of the biological study of living organisms. The information and ideas should be presented in a way that provides evidence that these have been understood and applied correctly. Material extracted from the sources should be referenced and incorporated into the main body of the essay in a way that demonstrates the student's understanding.

### **Criterion E: reasoned argument**

Because of the nature of the subject, students writing a biology extended essay must make a special effort to maintain a reasoned, logical argument that focuses on the research question. Essays that attempt to deal with a large number of variables are unlikely to be focused and coherent. A clear and logical argument can be achieved by making repeated reference to the research question and to the hypotheses derived from it. An assessment of the extent to which the hypotheses are supported, or the question is answered, by the data or information accessed should form part of the argument.

### **Criterion F: application of analytical and evaluative skills appropriate to the subject**

The stated conclusion(s) must be based on the data, information and/or evidence presented in the essay. The data must be analysed and presented in such a way that the argument leading to the conclusion is supported and clarified. Tables of raw data will generally not achieve this on their own. Raw data must be analysed, processed and presented in a way that relates clearly and directly to the central argument of the essay. Where appropriate, this analysis should allow for an assessment of the validity of the hypothesis. Errors and uncertainties arising from the methodology, instruments and/or techniques should be analysed and critically evaluated.

### **Criterion G: use of language appropriate to the subject**

Students writing in biology need to show a mastery of, and fluency in, the use of appropriate terminology. At the same time, students need to avoid excessive use of jargon. Any technical terms that are used should be explained and the student must demonstrate an understanding of these terms by using them appropriately within the text. The student must try to maintain a consistent linguistic style throughout the essay.

### **Criterion H: conclusion**

The conclusion should relate directly to the research question and should point out the main findings of the research. Biological research often reveals unexpected outcomes and these should be pointed out, even if they were not part of the original plan. The original research question may not be fully answered by the investigation. In these cases, the student should point out unresolved issues and make suggestions as to how these might be further investigated.

### **Criterion I: formal presentation**

Biological investigations often require the support of referenced material, not only in the form of text or data, but also as diagrams or drawings. Care must be taken to supply references for illustrations taken from sources. Students must avoid the temptation to supply illustrations for their own sake. Illustrative material should only be included if it enhances the argument or supplies information that cannot be easily provided in another way. Original photographs, photocopies or downloaded images that are not labelled or put into the context of the investigation are unlikely to enhance the essay.

Biological investigations often result in large quantities of raw data. Large tables of raw data are best included in an appendix. Processed data that is central to the argument of the essay should be included in the body of the essay, as close as possible to its first reference.

### **Criterion J: abstract**

For a biological investigation, the abstract must include the research question and a conclusion that directly relates to the research question. In addition, the description of how the research was conducted must include a description of the methodology and the scope of the study.

### **Criterion K: holistic judgment**

Qualities that are rewarded under this criterion include the following.

- Intellectual initiative: Ways of demonstrating this in biology essays include the choice of topic and research question, and the use of novel or innovative approaches to address the research question.
- Insight and depth of understanding: These are most likely to be demonstrated as a consequence of detailed research and thorough reflection, and by well-informed and reasoned argument that consistently and effectively addresses the research question.
- Originality and creativity: These will be apparent by clear evidence of a personal approach backed up by solid research and reasoning.

## **Business and management**

These subject guidelines should be read in conjunction with the “Introduction”, “Outline” and “Details—all essays” sections of this guide.

### **Overview**

An extended essay in business and management provides students with an opportunity to carry out in-depth research in an area of personal interest relating to business and management. This is likely to be in the context of the Diploma Programme business and management course, but students may also want to consider issues that fall outside the scope of this. For example, they may want to undertake a detailed investigation into work relating to a specific regional/national context, or perhaps practical applications relating to the work of a particular management theorist. Whichever research area is chosen, it should be firmly rooted in the realms of accepted business and management theory.

The extended essay provides students with an opportunity to develop research skills by reviewing business theory, concepts and principles, and critically analysing how these have been put into practice in the business world and the resultant impact on business activity. This will involve broad and detailed research using a range of sources. Excessive reliance on a single type of source, such as a company’s annual report, is unlikely to give students sufficient scope or breadth in their analysis of the research question. The extended essay requires the application of business theory, tools and techniques to produce a coherent and structured analytical essay that effectively addresses the research question.

## Choice of topic

Students should undertake an extended essay that uses the core principles of business and management as a basis for researching a particular topic. In their choice of topic, students are strongly advised to ensure they develop a research question that enables them to carry out relevant research and apply business theory, tools and techniques. It is important that the research question is sufficiently focused to allow adequate treatment within the word limit.

The following examples of titles for business and management extended essays are intended as guidance only. The pairings illustrate that focused topics (indicated by the first title) should be encouraged rather than broad topics (indicated by the second title).

- “What motivates employees? Can Herzberg’s motivation theory help explain the improvement in productivity at XYZ Ltd?” **is better than** “Have motivational techniques benefited XYZ Ltd?”.
- “How significant has the contribution of Just-in-Time production been in improving efficiency in the textile industry?” **is better than** “How effective are Just-in-Time production techniques?”.
- “Why has the practice of publishing environmental audits been adopted more widely in Country X than in Country Y?” **is better than** “Why do firms publish environmental audits?”.

The topic may be chosen because of an interest in issues raised in the classroom, aspects of a student’s own experience, or current events. The choice and treatment of the topic must, however, ensure that the student can address all the assessment criteria. An essay that is purely descriptive must be avoided: analysis and evaluation are critically important.

It may help in achieving this if the student further defines the topic chosen for study in the form of a research question, followed by a statement of intent that indicates which methodology is going to be used in answering the question. In this way, the approach to the topic chosen may be even further clarified. Some examples of this could be as follows.

|                   |  |
|-------------------|--|
| <b>Topic</b>      | <b>Operations management</b>   |
| Research question | To what extent has the introduction of Total Quality Management (TQM) improved quality at ABC Ltd?   |
| Approach          | A review of how quality management techniques have changed with the introduction of TQM. Relevant indicators are selected for measuring quality and the data for ABC Ltd is collected. The way in which ABC Ltd have adapted their approach to managing quality, and the impact of this on the selected indicators, is analysed and evaluated. |
| <b>Topic</b>      | <b>Growth strategies</b>   |
| Research question | How effective has the joint venture between ABC Ltd and UBI Ltd been as a growth strategy?   |
| Approach          | A review from secondary sources of growth strategies available to a firm and joint ventures specifically. Relevant indicators are selected to quantify the impact of the joint venture on the growth of ABC Ltd and UBI Ltd. Relevant data is collected from the two businesses, and the findings are analysed and evaluated.                  |
| <b>Topic</b>      | <b>Financial performance</b>   |
| Research question | Why has the market capitalization of XYZ Plc increased more than the market capitalization of its competitor ABC Plc?  |

|          |  |
|----------|--|
| Approach | A review from secondary sources of factors affecting financial performance and selection of variables that may contribute to differences in market capitalization. Data is collected and a comparative analysis is made of the findings. |
|----------|--|

## Treatment of the topic

Students should use as the basis of their extended essay secondary data, supported, where appropriate, by primary research. The sole use of secondary sources will allow students access to all levels of the extended essay assessment criteria. (Note that this is the reverse of the approach required in the HL internal assessment component of the business and management course, where primary research takes precedence.) Students should apply the accepted theories, tools and techniques of the subject to the topic/research question chosen. These may be applied to an organization, industry or market in a particular region or country, or globally. Students should ensure that the treatment of the topic allows for an analytical approach.

It is important that the approach to all aspects of the essay is directly related to the research question and that the research carried out addresses the question. Topics researched should not be too broad in scope. The development of the essay must be related to the question directly and must not include information that is unnecessary. Strategic approaches should be encouraged and considered—for example, the effect of new technologies and cultural, international and ethical implications.

If primary research is carried out in relation to an organization, there is a need for tact, sensitivity to other people and respect of confidentiality.

A good extended essay will demonstrate the appropriate use and application of selected analytical tools, often supported by statistical data to assist the discussion and evaluation.

Some examples of analytical tools are as follows.

- Ansoff's Matrix
- Boston Matrix
- Break-even analysis
- Decision tree analysis
- Financial accounts and performance ratios
- Fishbone analysis
- PEST (LE) analysis
- Porter's generic strategies and five forces
- Position maps
- Statistical tables/charts/diagrams
- SWOT analysis

Students must ask probing questions and look at all relevant factors when considering the information obtained from their research. Information cannot always be accepted at face value. A critical approach, in which the skills of analysis and evaluation are displayed, is essential. Students should indicate unresolved questions, or new questions that have arisen from their study, in their conclusions.

An extended essay in business and management is a formal essay and, as such, should fully meet the assessment criteria for the organization and formal presentation of an extended essay. In addition, it should be remembered

that a business and management essay must be written in an objective style without personal bias. Observations and conclusions should be derived from the evidence and not based on any preconceptions of the student.

Frequent reference to the assessment criteria by both the supervisor and the student will help keep a sharper focus on the essay.

## Interpreting the assessment criteria

### **Criterion A: research question**

The research question can often be best defined in the form of a question. It may, however, also be presented as a statement, proposition or hypothesis for discussion. It must be specific and sharply focused. Topics or questions that consider broad areas of business and management theory may limit the possibility of effective treatment within the word limit and constrain performance on this criterion.

### **Criterion B: introduction**

The introduction should relate the research question to existing subject knowledge: the student's personal experience or particular opinion is rarely relevant here. While it is important in the introduction to consider the theoretical business context for the essay, it is not the place for a full review or explanation of that theory. The introduction should consider why the question chosen is an important one for businesses/organizations and/or the managers of those businesses/organizations, and, therefore, why it is an important topic for investigation. The research question should be clearly set in a business and management context.

### **Criterion C: investigation**

The range of resources available will be influenced by various factors, but above all by the topic chosen. Students should use secondary sources in the first instance. These may include the internet, textbooks and research literature/journals. They could also include materials sourced from a particular business or organization whose area of business is related to the topic chosen (for example, market research companies, industry analysts or individual business organizations). Statistical data may be valuable, although this is likely to depend on the nature of the topic/research question chosen. Sources for this might include the internet, government departments, business research organizations or industry analysts. Evidence can be conflicting and in need of explanation and analysis. The reliability of sources needs to be examined, and relevant information clearly and systematically presented. If students make use of internet-based sources, they should do so critically and circumspectly in full awareness of their potential unreliability.

Where primary research is used, it must be carefully planned to ensure that it will enhance the value of the research undertaken, and provide specific quantitative and qualitative analysis directly related to the research question.

### **Criterion D: knowledge and understanding of the topic studied**

This criterion requires students to show detailed knowledge and understanding of the topic being researched, and its academic context. This means that they need to demonstrate relevant links between the topic and relevant business theories and techniques. These interrelationships need to be explicitly explained to reveal a clear knowledge and understanding. To demonstrate an appropriate level of knowledge and understanding, it is likely that students will need to use a range of sources.

### **Criterion E: reasoned argument**

To score highly on this criterion, students need to link the research question with the conclusion in a clear, structured and logical way. A valid and persuasive argument needs to be developed in terms of business and management in the context of the business theory used. This means that there should be clear links that can easily

be followed between the research question and the conclusion. These links should be developed throughout the essay in a coherent, flowing and structured way that is valid and persuasively presented.

To ensure reasoned argument, the essay should also demonstrate clear links between the data and evidence presented, and the arguments developed from the data. Straightforward descriptive or narrative accounts that lack these links are unlikely to advance a successful argument and should be avoided.

**Criterion F: application of analytical and evaluative skills appropriate to the subject**

To score highly on this criterion, students need to demonstrate a sophisticated application of analytical and evaluative skills. This requires students to use the data and business theory they have considered and to assess arguments relating to the various aspects of the topic under consideration. This assessment should include a consideration of the relative value and importance of particular arguments in answering the research question. The research question should help focus this analysis and ensure that students are applying evaluative skills to make reasoned and supported judgments.

**Criterion G: use of language appropriate to the subject**

This criterion requires clear and precise use of business language and terminology. This must be used consistently throughout the essay and applied with consideration of the context of the arguments being used.

**Criterion H: conclusion**

“Consistent” is the key word here: the conclusion should develop out of the argument and not introduce new or extraneous matter. It should not repeat material from the introduction; rather, it should present a new synthesis in light of the discussion.

**Criterion I: formal presentation**

This criterion relates to the extent to which the essay conforms to academic standards about the way in which research papers should be presented. The presentation of essays that omit a bibliography or that do not give references for quotations is deemed unacceptable (level 0). Essays that omit one of the required elements—title page, table of contents, page numbers—are deemed no better than satisfactory (maximum level 2), while essays that omit two of them are deemed poor at best (maximum level 1).

The sources of all data used should be fully acknowledged and exact website addresses and dates of access given.

**Criterion J: abstract**

The abstract is judged on the clarity with which it presents an overview of the research and the essay, not on the quality of the research question itself, nor on the quality of the argument or the conclusions.

**Criterion K: holistic judgment**

Qualities that are rewarded under this criterion include the following.

- Intellectual initiative: Ways of demonstrating this in business and management essays include the choice of topic and research question, the nature and breadth of the theory chosen to help answer the research question, and the breadth of research sources and imagination used in sourcing relevant material/data.
- Insight and depth of understanding: These are most likely to be demonstrated through the analytical depth used to answer the research question, and the appropriateness of the business theories and tools used.

# Chemistry

These subject guidelines should be read in conjunction with the “Introduction”, “Outline” and “Details—all essays” sections of this guide.

## Overview

An extended essay in chemistry provides students with an opportunity to investigate a particular aspect of the materials of our environment. Such extended essays must be characterized by a particular chemical emphasis within a more general set of research criteria.

The outcome of the research should be a coherent and structured piece of writing that effectively addresses a particular issue or research question and arrives at a particular, and preferably personal, conclusion.

## Choice of topic

It is important that the extended essay has a clear chemical emphasis and is not more closely related to another subject. Chemistry is the science that deals with the composition, characterization and transformation of substances. A chemistry extended essay should, therefore, incorporate chemical principles and theory, and emphasize the essential nature of chemistry, relating to the study of matter and of the changes it undergoes.

Although the same assessment criteria apply to all extended essays, for an extended essay submitted in chemistry the topic chosen must allow an approach that distinctly involves chemistry. Where a topic might be approached from different viewpoints, the treatment of the material must be approached from a chemistry perspective. For example, an extended essay in an interdisciplinary area such as biochemistry will, if registered as a chemistry extended essay, be judged on its chemical content, not its biological content.

The scope of the topic and the research associated with it should enable all the criteria to be addressed. A good topic is one where the single research question is sharply focused and can be treated effectively within the word limit. Perhaps the most important factor is the depth of treatment that can be given to the topic by the student. Broad or complex survey topics (for example, investigations into health problems caused by water pollution, chemotherapy for cancer treatment or the use of spectroscopy in chemical analysis) will not permit the student to discuss conflicting ideas and theories, nor to produce an in-depth personal analysis within the word limit.

Some topics may be unsuitable for investigation because of safety issues. For example, experiments involving toxic or dangerous chemicals, carcinogenic substances or radioactive materials should be avoided unless adequate safety apparatus and qualified supervision are available.

Other topics may be unsuitable because the outcome is already well known and documented in standard textbooks, **and** the student may not be able to show any personal input. An example might be a study of the reactions of the alkali metals with water as this is already covered by the syllabus. However, some care does need to be exercised in deciding whether a topic is suitable or not; for example, previously, the study of the allotropes of carbon might have been thought to be trivial but this would not be the case today.

The following examples of titles for chemistry extended essays are intended as guidance only. The pairings illustrate that focused topics (indicated by the first title) should be encouraged rather than broad topics (indicated by the second title).

- “The ratio of the gases evolved at the positive electrode during the electrolysis of common salt solution” **is better than** “Electrolysis of solutions”.
- “Spectrophotometric determination of trace amounts of lead in drinking water” **is better than** “Water analysis”.



- “The effects of sugar-free chewing gum on the pH of saliva in the mouth after a meal” **is better than** “Acid–base chemistry”.
- “How can the natural oxidant rutin be extracted and purified from the seed of the Chinese Scholartree?” **is better than** “Extraction of natural products from plants”.

Moreover, it may help if the student further defines and refines the topic chosen for study in the form of a research question or statement.

|                   |   |
|-------------------|---|
| <b>Title</b>      | <b>The ratio of the gases evolved at the positive electrode during the electrolysis of common salt solution</b>   |
| Research question | Is there a relationship between the concentration of aqueous sodium chloride solution and the ratio of the amounts of oxygen and chlorine gas that are evolved at the positive electrode during electrolysis? |
| <b>Title</b>      | <b>The caffeine content of a cup of tea</b>   |
| Research question | Does the time it takes to brew a cup of tea using a specific commercial brand of tea leaves significantly alter the amount of caffeine that is dissolved in the drink?  |
| <b>Title</b>      | <b>Analysis of strawberry jellies by paper chromatography</b>   |
| Research question | The use of paper chromatography to determine whether strawberry jellies obtained from 24 different countries in 5 different continents all contain the same red dyes.   |

## Treatment of the topic

An extended essay in chemistry may be based on literature, theoretical models or experimental data. Whichever category or combination of categories is chosen, the student should ensure that sufficient data is available for evaluation and that the topic can be researched accurately using locally available resources.

Students who choose to write an extended essay based on literature and/or surveys should ensure that their extended essay clearly shows its chemical basis. Essays written at the level of a newspaper or news magazine article are unlikely to achieve a high mark.

Since chemistry is an experimental science, students are strongly encouraged to undertake experimental work as part of their research, although this is not compulsory. In order to place their research into the appropriate context, students should research the area of the investigation before commencing any experimental work. Where possible, they should consult original research using scientific journals, personal communications and the internet. Textbooks should never be the only source of information.

All essays involving experimental work undertaken by the student should include a clear and concise description of the experimental work. Students should indicate clearly whether they have personally designed the experiment, or give the source of an existing experiment method that they have used and state how they have adapted and improved upon it. All essays must be supervised by a school supervisor. Many of the best essays are written by students investigating relatively simple phenomena using apparatus and materials that can be found in most school laboratories, and this approach is to be encouraged. If the practical work is carried out in an industrial or university laboratory, the essay should be accompanied by a letter from the external supervisor outlining the nature of the supervision and the level of guidance provided. The school supervisor must be satisfied that the work described in the essay is genuine and essentially that of the student.

Data collected from an experiment designed by the student is of little value unless it is analysed using appropriate scientific techniques, evaluated and perhaps compared with appropriate models.

It is possible to produce an extended essay in chemistry in which the student has used data collected elsewhere as the primary source. In such cases, the element of personal analysis and evaluation is extremely important.

In any chemistry extended essay, students should be able to demonstrate that they understand the theory underlying any experimental work and state any assumptions made. They should show an understanding of the results obtained and be able to interpret them with reference to the research question posed. They should be critical of inadequate experimental design, the limitations of the experimental method and any systematic errors. Students should be encouraged to consider unresolved questions in their research, and to suggest new questions and areas for further investigation in their conclusion. Throughout the whole of the essay, students should emphasize clearly their own personal contribution.

## Interpreting the assessment criteria

### Criterion A: research question

Many research questions can be formulated as an actual question or questions. A typical example is: “What gas is evolved when zinc is added to copper (II) sulfate solution and what factors affect its formation?”. However, in chemistry extended essays it is perfectly reasonable to formulate the research question as a statement or as a hypothesis rather than an actual question. “An analysis of the amount of aluminium in three different brands of underarm deodorant by visible spectroscopy” and “The kinetics of oxidation of iodide ions with hydrogen peroxide in acidic solutions” are two such examples where a statement rather than a question is appropriate. Whichever way it is formulated, it should be identified clearly as the research question and set out prominently in the introduction.

### Criterion B: introduction

The purpose of the introduction is to set the research question into context, that is, to relate the research question to existing knowledge in chemistry. It is usually appropriate to include also the underlying chemical theory required to understand how the research question has arisen. Some research questions require some background knowledge that is not related to chemistry—for example, “Do the fossils found in different strata of rocks at a particular location contain different amounts of sulfur?”. For the essay to make sense, it would be important to state the ages of the rocks and give some geological background. In such cases, only the essential non-chemistry information should be provided in the introduction, as the essay will be marked on its chemical content. If it is necessary to include more non-chemistry (for example, geological) information, then the appropriate place for it is the appendix.

### Criterion C: investigation

The way in which the investigation is undertaken will depend very much on whether or not the essay contains experimental work performed by the student. For non-experimental essays, students should endeavour to show clearly how the data has been selected. They should distinguish between primary sources (original scientific publications, personal communications, interviews) and secondary sources (textbooks, newspaper articles, reviews), and show awareness of how reliable these sources are. For experimental work, sufficient information should be provided so that the work could be repeated if necessary by an independent worker. Students should make it clear which experiments they have designed themselves and which they have altered, adapted or improved from existing methods.

### Criterion D: knowledge and understanding of the topic studied

Students should show that they understand fully the underlying chemistry behind the context of their research question and their subsequent investigation. They are not expected to explain basic chemistry forming part of the Diploma Programme chemistry course, but they are expected to show that they fully understand the relevant principles and ideas and can apply them correctly. They should also demonstrate that they understand the theory behind any techniques or apparatus used.

**Criterion E: reasoned argument**

Students should be aware of the need to give their essays the backbone of a developing argument. A good argument in chemistry will almost certainly include consideration and comparison of different approaches and methods directly relevant to the research question. Straightforward descriptive or narrative accounts that lack analysis do not usually advance an argument and should be avoided.

**Criterion F: application of analytical and evaluative skills appropriate to the subject**

A thorough understanding of the reliability of all data used to support the argument should be shown. Inadequate experimental design or any systematic errors should be exposed. The magnitude of uncertainties in physical data should be evaluated and discussed. Approximations in models should be accounted for and all assumptions examined thoroughly. Where possible, the quality of sources accessed or data generated should be verified by secondary sources or by direct calculations.

**Criterion G: use of language appropriate to the subject**

Correct chemical terminology and nomenclature should be used consistently and effectively throughout the extended essay. Relevant chemical formulas (including structural formulas), balanced equations (including state symbols) and mechanisms should be included. The correct units for physical quantities must always be given and the proper use of significant figures is expected.

**Criterion H: conclusion**

The conclusion must be consistent with the argument presented and should not merely repeat material in the introduction or introduce new or extraneous points to the argument. In chemistry, it is almost always pertinent to consider unresolved questions and to suggest areas for further investigation.

**Criterion I: formal presentation**

This criterion relates to the extent to which the essay conforms to academic standards about the way in which research papers should be presented. The presentation of essays that omit a bibliography or that do not give references is deemed unacceptable (level 0). Essays that omit one of the required elements—title page, table of contents, page numbers—are deemed no better than satisfactory (maximum level 2), while essays that omit two of them are deemed poor at best (maximum level 1).

The essay must not exceed 4,000 words of narrative. Graphs, figures, calculations, diagrams, formulas and equations are not included in the word count. For experiments where numerical results are calculated from data obtained by changing one of the variables, it is generally good practice to show one example of the calculation. The remainder can be displayed in tabular or graphical form.

**Criterion J: abstract**

The abstract is judged on the clarity with which it presents an overview of the research and the essay, not on the quality of the research question itself, nor on the quality of the argument or the conclusions.

**Criterion K: holistic judgment**

Qualities that are rewarded under this criterion include the following.

- Intellectual initiative: Ways of demonstrating this in chemistry essays include the choice of topic and research question, and the use of novel or innovative approaches to address the research question.
- Insight and depth of understanding: These are most likely to be demonstrated as a consequence of detailed research and thorough reflection, and by a well-informed and reasoned argument that consistently and effectively addresses the research question.
- Originality and creativity: These will be apparent by clear evidence of a personal approach backed up by solid research and reasoning.

# Classical Greek and Latin

These subject guidelines should be read in conjunction with the “Introduction,” “Outline” and “Details—all essays” sections of this guide.

## Overview

An extended essay in classical Greek or Latin provides students with an opportunity to investigate in depth non-trivial controversies of particular personal interest in the context of the ancient Greek or Roman worlds.

## Choice of topic

The chosen topic will normally focus on a non-trivial aspect of the language, literature or civilization of the ancient Greek or Roman world, where scholarly opinion is divided.

Students may choose to focus either on linguistic features of classical Greek or Latin, or to investigate some aspect of classical Greek or Latin literature, or of classical Greek or Roman culture. Usually, however, since the language, literature and civilization are closely interwoven, it is appropriate to study the language in the context of the literature and civilization, and literature and civilization as presented through the classical Greek or Latin languages.

A topic should be rejected if it is interdisciplinary in nature, and/or not directly related to classical languages, literature or civilization, or is too broad to be covered effectively within the word limit.

The following examples of titles for classical languages extended essays are intended as guidance only. The pairings illustrate that controversial topics (indicated by the first title) should be encouraged rather than non-controversial ones (indicated by the second title).

- “The opening of Thucydides’ history is (or is not) a valid model for subsequent historians to aspire to” **is better than** “The purpose of Thucydides’ history is revealed by its opening”.
- “Does the Melian debate, as presented by Thucydides, reveal the true nature of Athenian democracy, or does he present it as an atypical aberration?” **is better than** “How does Thucydides present the Melian episode?”.
- “Catullus’ poetry is (or is not) autobiographical” **is better than** “Catullus’ love poetry”.
- “Cicero was (or was not) justified in executing Catiline” **is better than** “The Catilinarian conspiracy”.
- “Does the end of the *Aeneid* reveal that Virgil had lost any belief in the Augustan system he may have had, or does such a view ignore important truths about the Roman world?” **is better than** “What is the importance of the last scene of the *Aeneid*?”.

## Treatment of the topic

The topic will normally be investigated by particular reference to appropriate texts and commentaries or other source material such as works of art or architecture.

If the focus of the extended essay is linguistic, it is essential for the student to demonstrate an understanding of the grammatical structure of the language and show how, for example, authors exploit its features.

If the focus of the extended essay is on literature, the student should show an awareness of a work read, at least partly, in the original Greek or Latin. The extended essay should reveal an understanding of the ways in which the author exploits the language to create particular effects.

If the focus of the extended essay is on the ancient civilization concerned, it should show clear evidence of substantial background reading and an awareness of the major historical and cultural features at work in this setting. Links between the language, literature and culture should be identified and scrutinized.

The historical context of the extended essay should be established by means of appropriate references to literature, art and archeological sources.

## **Interpreting the assessment criteria**

### **Criterion A: research question**

The research question must be appropriate to the particular subject in which the essay is registered. In classical Greek and Latin, this means that it must focus on an aspect, usually a controversial one, of the ancient Greek or Roman world. The research question must be clearly and precisely focused, and stated in both the abstract and introduction of the essay.

### **Criterion B: introduction**

The introduction should explain succinctly the significance and context of the topic, why it is worthy of investigation and, where appropriate, how the research question relates to existing knowledge. It should not be used to present lengthy, irrelevant background material.

### **Criterion C: investigation**

A well-planned investigation will consider carefully the range of resources available that are relevant to the topic. Students should aim to make use of both primary and secondary sources where possible. The data gathered should be the evidence found in the sources to establish the context and to support the argument and conclusion of the essay. All material used from sources must be acknowledged in references. If students make use of internet-based sources, they should do so critically and circumspectly in full awareness of their potential unreliability.

### **Criterion D: knowledge and understanding of the topic studied**

This criterion demands that the essay has a solid foundation of specific relevant knowledge, whose meaning is understood by the student. This knowledge can then be analysed, and, on the basis of this analysis, an argument can be formed and a conclusion to the research question reached.

### **Criterion E: reasoned argument**

Students should be aware of the need to give their essays the backbone of a developing argument. Personal views should not simply be stated but need to be supported by reasoned argument based on specific details, to persuade the reader of their validity. Straightforward descriptive or narrative accounts that lack analysis do not usually advance an argument and should be avoided.

### **Criterion F: application of analytical and evaluative skills appropriate to the subject**

Students should analyse (that is, consider the meaning and importance of) the relevant material discovered in their investigation to argue a case and reach a conclusion. Sources used in the research process, whether by classical authors or modern commentators, should be carefully evaluated and their reliability assessed.

### **Criterion G: use of language appropriate to the subject**

Students are expected to be familiar with the vocabulary of classical studies and should provide definitions of key terms. The language of the essay must be clear and unambiguous, and statements should be specific and precise, avoiding sweeping generalizations and unsupported assertions. However, provided that their meaning is clear, students who are not writing in their first language will not be disadvantaged.

### **Criterion H: conclusion**

“Consistent” is the key word here: the conclusion should develop out of the argument and not introduce new or extraneous content. It should not repeat the material of the introduction; rather, it should present a new synthesis in light of the discussion.

### **Criterion I: formal presentation**

This criterion relates to the extent to which the essay conforms to academic standards about the way in which research papers should be presented. The presentation of essays that omit a bibliography or that do not give references for quotations is deemed unacceptable (level 0). Essays that omit one of the required elements—title page, table of contents, page numbers—are deemed no better than satisfactory (maximum level 2), while essays that omit two of them are deemed poor at best (maximum level 1).

### **Criterion J: abstract**

The abstract must consist of three elements: the research question (or hypothesis), the scope of the essay (that is, what was investigated and how it was investigated) and the conclusion. An abstract is not a precis of the topic.

### **Criterion K: holistic judgment**

Qualities that are rewarded under this criterion include the following.

- Intellectual initiative: Ways of demonstrating this in classical Greek and Latin essays include the choice of topic and research question, and new approaches to popular topics (possibly achieved through evaluating different historical explanations).
- Insight and depth of understanding: These are most likely to be demonstrated as a consequence of detailed research, reflection that is thorough and well informed, and reasoned argument that consistently and effectively addresses the research question.

## Computer science

These subject guidelines should be read in conjunction with the “Introduction”, “Outline” and “Details—all essays” sections of this guide.

### **Overview**

An extended essay in computer science provides students with an opportunity to investigate a particular aspect of computing and its implications for society and the world. Within this context, they can research the latest developments and future possibilities in a subject that changes with increasing speed and is continually breaking new barriers. There are many possible areas to be explored, each with a wealth of topics: advances in hardware and software development, comparison of the efficiency of algorithms designed to speed up data transmission or to encrypt data, network systems, computer control systems and so on.

### **Choice of topic**

It is important that the chosen topic and its treatment reflect a firm emphasis on computing. Students must show that they have gained an understanding of the topic and the relevant theory and practices of computer science.

It is also important that the work goes beyond a summary of journalistic views on a particular topic. It is not sufficient for the student simply to describe new advances and developments in computing. Students are expected to analyse their findings and consider the implications.

Often, the ethical and social effects of the topic chosen will be important and may well have a part within the essay, for example, in the conclusion. However, an essay that makes these considerations a major focus is not appropriate

and would be better submitted as an information technology in a global society (ITGS) essay. An in-depth analysis of trends and advances in computing should include aspects of the theory of computer science, which would necessarily demonstrate a high degree of technical knowledge and understanding.

Data for analysis may be generated from a program written by the student. This is often an appropriate method of investigation but the code itself, and its development, will not be rewarded under the assessment criteria. The extended essay is not in any way to be confused with the program dossier that is completed as the internal assessment component for the computer science course. If the data analysed is not directly related to computer science, the extended essay should be registered in another, more relevant, subject.

The chosen topic may be inspired by a magazine article, an internet site, one of the case studies published in connection with computer science paper 2 examinations, a conversation or simply an idea that could fall into one of the following areas of interest.

- Aspects of the current computer science syllabus that are not treated in depth
- Current aspects of computing that are set to change or be challenged in the near future
- Future developments that are currently experimental but beginning to look possible
- Solutions to limitations that are evident in current hardware or software
- Comparisons between different computer systems that are actually in place

The topic chosen should allow the student to make a full appropriate analysis, putting forward his or her own point of view. Historical aspects of computing do not lend themselves to this treatment. However, there may sometimes be a place for summarizing developments that have occurred until now, to put the topic in perspective or to use as a basis for predicting the future.

Availability of resources should be a consideration when deciding on a topic. The student should not choose to investigate a complex computing topic for which they have little or no access to appropriate background material and/or resources.

The following examples of titles for computer science extended essays are intended as guidance only. The pairings illustrate that focused topics (indicated by the first title) should be encouraged rather than broad topics (indicated by the second title).

- “Comparison of symbolic algorithmic approach and fuzzy logic in constructing an expert system” **is better than** “Artificial Intelligence”.
- “Has the increase in processing power diminished the need for complicated sorting algorithms?” **is better than** “Sorting algorithms and processor speed”.
- “What level of data compression in music files is acceptable to the human ear?” **is better than** “Data compression techniques”.
- “How secure is Secure Sockets Layer protocol?” **is better than** “Internet security”.

It may help for the student to start with a broad topic or area of interest, refine this further into a research question and then add a statement of intent that indicates which broad process is going to be used in answering the question.

|                   |   |
|-------------------|---|
| <b>Topic</b>      | <b>Advances in computer processing</b>                    |
| Research question | Will fuzzy logic replace binary logic in the near future? |

|                   |   |
|-------------------|---|
| Approach          | An investigation into the current state of implementation of multi-state logic and the differences between this and binary state logic. |
| <b>Topic</b>      | <b>Networking system</b>  |
| Research question | Is wireless networking a feasible alternative to cabled networking within a whole-city context?   |
| Approach          | A feasibility study of the hardware and communications needed to set up a city-wide network in wireless and cabled systems.             |

It should be noted that a research question is not the only way of specifying the topic, but it does help in the development of the essay as the student and supervisor can come back to the question as a reference point.

### Treatment of the topic

An extended essay in computer science is not intended as a vehicle to demonstrate programming skills. These are demonstrated in the program dossier (the internal assessment requirement of the computer science course). The extended essay is an opportunity for students to be creative in a different sphere—that of independent, personal research.

While an extended essay may refer to a programming exercise, such as a compiler for a new language designed by the student, the emphasis in such a case should be on the design, development and analysis of the compiler and on language design. Some evaluation of the compiler in relation to those already existing is also expected. Although program fragments may be included in the body of the extended essay to support the design and the discussion, the **full** program code (including internal documentation) should appear in an appendix as evidence. Each line of code that appears in the body of the essay should count as two words when calculating the length of the essay, while any internal documentation of a program fragment should be ignored.

Futuristic topics in computer science should be based on sound theory and projections of well-known computer and information science authorities. Students are expected to support personal conclusions by the theories presented. This is an area where students need to be particularly careful that the analysis they apply to information gathered is their own independent analysis and that the information they use is from reliable sources.

Students are likely to turn to the internet for sources of information. When doing so, they need to verify the reliability of sources and also ensure that they are not relying too heavily on these sources to collate, rather than analyse, information. Students are expected to evaluate critically the resources consulted during the process of writing the essay.

Frequent reference to the assessment criteria by both the supervisor and the student will help keep a sharper focus on the project.

### Interpreting the assessment criteria

#### Criterion A: research question

Although the aim of the essay can best be defined in the form of a question, it may also be presented as a statement or proposition for discussion. It must be:

- specific and sharply focused
- appropriate to the particular area of computer science being explored



- centred on computer science and not on peripheral issues such as the history of computing or the social implications of technology
- stated clearly early on in the essay.

### **Criterion B: introduction**

The introduction should relate the research question to existing subject knowledge, putting it into context. Basic computing knowledge can be assumed and it is not expected that students write lengthy sections explaining theory that is common knowledge or part of the syllabus of the computer science course.

### **Criterion C: investigation**

The range and type of sources available will be influenced by various factors, but above all by the topic chosen. For example, if runs of a program are carried out to test an algorithm for efficiency against an alternative one then the data must be adequate.

Any statistics collected should be reliable and relevant to the research question. It is also important to consult a large number of sources. Particular care should be taken in such a rapidly changing area to ensure that all sources (books, magazines and internet sites) used are up to date.

### **Criterion D: knowledge and understanding of the topic studied**

The student is expected to be capable of coherently discussing the topic, hence demonstrating a sound knowledge of computing within the chosen area and an ability to explain academic concepts to a degree that shows a full understanding. The knowledge and concepts should go beyond those called for in the current *Computer science guide*.

### **Criterion E: reasoned argument**

Students should be aware of the need to give their essays the backbone of a developing argument. Personal views should not simply be stated but need to be supported by reasoned argument or experimentation to persuade the reader of their validity. Straightforward descriptive or narrative accounts that lack analysis do not usually advance an argument and should be avoided.

### **Criterion F: application of analytical and evaluative skills appropriate to the subject**

A computer science extended essay demands that the student applies logical, critical and creative thinking to a specific topic, as well as showing an appreciation of the consequences arising from technological development.

### **Criterion G: use of language appropriate to the subject**

The effective use of computer science terminology includes the appropriate use of technical vocabulary. Layman terms for computer parts and systems should not be used.

### **Criterion H: conclusion**

“Consistent” is the key word here: the conclusion should develop out of the argument and not introduce new or extraneous matter. It should not repeat the material of the introduction; rather, it should present a new synthesis in light of the discussion. It should be evident from the conclusion that the student has fully understood the implications of the topic and is able to make a clear, independent evaluation.

### **Criterion I: formal presentation**

This criterion relates to the extent to which the essay conforms to academic standards about the way in which research papers should be presented. The presentation of essays that omit a bibliography or that do not give references for quotations is deemed unacceptable (level 0). Essays that omit one of the required elements—title page, table of contents, page numbers—are deemed no better than satisfactory (maximum level 2), while essays that omit two of them are deemed poor at best (maximum level 1).

Program code should generally be placed in an appendix. Where it needs to be included within the body of the essay, each line of code should count as two words when calculating the length of the essay, while any internal documentation of a program fragment should be ignored.

### **Criterion J: abstract**

The abstract is judged on the clarity with which it presents an overview of the research and the essay, not on the quality of the research question itself, nor on the quality of the argument or the conclusions.

### **Criterion K: holistic judgment**

Qualities that are rewarded under this criterion include the following.

- Intellectual initiative: Ways of demonstrating this in computer science essays include using sources other than the internet and printed resources to gain information that could not have been found otherwise.
- Insight and depth of understanding: These are most likely to be demonstrated as a consequence of detailed research, reflection that is thorough and well-informed, and reasoned argument that consistently and effectively addresses the research question.
- Creativity: This can be shown in many ways, for example, by using an unusual but effective approach, by taking a controversial, but credible, stance or by extrapolating an extra logical step when forming a conclusion.

## Dance

These subject guidelines should be read in conjunction with the “Introduction”, “Outline” and “Details—all essays” sections of this guide.

### **Overview**

An extended essay in dance provides students with an opportunity to focus on a topic in dance of particular interest to them. In consultation with the supervisor, the student should carefully choose a topic of special interest, keeping in mind the availability of sources required to research it. The student is encouraged to develop a plan and structure for the research before its commencement, then to proceed in a disciplined and imaginative way to arrive at a logical, and preferably personal, conclusion.

Dance as expressive movement with intent, purpose and form that communicates through the body and gesture of the dancer should be at the heart of an extended essay in dance. A particular dance or a particular style of dance may be chosen as the core focus of the extended essay. Students should strive for a coherent verbal analysis and interpretation of one or more dances in relation to the chosen research question. Although the dance itself is of primary importance, consideration should be given to the role of the dance, dance styles or traditions within their cultural context, in terms of their historical and current practice, as well as their social, religious, political and/or intellectual significance.

### **Choice of topic**

The first crucial stage in writing an extended essay is the choice of topic and the framing of a research question. A research question (or a title) should imply the overall scope of the essay without unduly restricting its development. The chosen topic may be inspired by one or several of the following areas of interest. (Please note, this is not an exhaustive list but is intended for guidance only.)

- Aspects of the Diploma Programme dance course (for Diploma Programme dance students)

- Performances of dance
- Dance cultures and traditions that students encounter
- Personal contact with choreographers or arrangers of dances, and/or dancers
- Direct involvement in the making of dances
- Film, video, DVD or internet dance presentations
- Personal interests/concerns about the field of dance

Students should note that the Diploma Programme dance course includes assessment components in performance, composition and analysis, and world dance investigation. Those who choose to write an extended essay in dance should focus on a research question that has no common ground with the material of their world dance investigation.

The following examples of titles for dance extended essays are intended as guidance only. The pairings illustrate that focused topics (indicated by the first title) should be encouraged rather than broad topics (indicated by the second title).

- “The influence of historic modern dance in the mid-20th century on the work of choreographer Lin Hwai Min, artistic director of the Cloud Gate Dance Theatre (in Taiwan)” **is better than** “Modern dance in Taiwan”.
- “The role of ritual in Afro-Caribbean dance in selected works of Katherine Dunham” **is better than** “Ritual in Afro-Caribbean dance”.
- “The impact of Rudolph Nureyev on the style of male dancing in the Royal Ballet (of Britain)” **is better than** “Male dancing in the Royal Ballet (of Britain)”.
- “The influence of Gregory Hines on the re-emergence of rhythm tap dance in the United States as a theatrical dance form” **is better than** “Tap dance in the United States”.

### Treatment of the topic

The structure of the extended essay is important to its success. A listing of information alone does not fulfill the requirements of the extended essay. The essay should, therefore, express a reasoned argument (hypothesis): a point of view that is presented logically.

When the research topic has been established, it is suggested that the student makes a research plan that allows for some flexibility as the essay develops. The research plan should take account of what information is available, or what might become available. The range of materials used will vary according to the topic, but it is important that adequate sources are accessible, though not necessarily too easily accessible. Sometimes the hunt for information can be part of the challenge and become part of the essay itself.

The viewing of performances and participation in classes and/or workshops directly pertaining to the chosen topic can be excellent primary sources for the investigation. If these opportunities are not available to the student, then dance references in relevant film, video, DVD and internet sources, as well as dance notation and photographs of dance performances, are also considered primary sources. Interviews with practitioners are also recognized as primary source material. It may be appropriate to include transcripts of such interviews, or extracts from them, in an appendix to the essay, although students should be aware that transcription is very time-consuming.

For an essay on dance, it may be that a pertinent statement from a dance practitioner quoted in a book will be regarded as a primary source. However, absolute reliance on textbooks and the internet is discouraged and no extended essay in dance should be based exclusively on such sources. Textbooks and the internet should only be

consulted if they encourage direct and personal involvement in the essay topic, or if they stimulate original ideas and provide models for the structure of the essay.

It should be noted that access to film and videotape only became available in the early to mid 20th century. Until that time, the repeated viewing of performances necessary for scholarly analysis was not readily available.

In dance, the student faces a challenge in researching specific works when live performance, videotape and/or film recordings are not available. While the music notation system that first developed during the Renaissance in Europe is still in broad use today, dance notation systems have radically changed and earlier systems are not used other than for purposes of reconstruction. Furthermore, contemporary dance notation systems are used predominantly by professional dance notators and ethnologists, and are not accessible to most dancers and choreographers. In the dance field, these notation systems serve principally archival and reconstruction purposes. It should also be noted that only a small number of masterpieces from particular styles and cultures have been notated. However, ancient dance manuals do exist.

Because of the challenges stated previously regarding the limited availability of historical dance sources, it is of great importance for students writing a dance extended essay to focus at least part of their research on a present-day issue to allow primary sources to be consulted.

In summary, wherever possible, students should rely on primary sources to support the argument (performances, film, video, DVD, notation, interviews) and use secondary sources (textbooks and the internet) as evidential support.

Students are expected to evaluate critically the sources consulted during the process of writing the essay, by asking themselves the following questions.

- Which sources are vital to the support of my ideas, opinions and assertions?
- Which sources do not contribute to the analysis?

Many different approaches to the research question can be appropriate, for instance:

- use of primary sources (dance and dancers) and secondary sources (material about dance) in order to establish and appraise varying interpretations
- analysis of sources (primary and secondary) to explore and explain particular aspects of dance
- use of primary source material for an analysis, with emphasis on a particular aspect of dance
- the collection and analysis of transmitted dance performances, leading to a comparison of similar or different forms of dance.

It may further assist a student in refining the focus of his or her research if, beyond the topic and research question, a succinct statement is produced that outlines the overall approach of the investigation. An example of this might be the following.

|                   |   |
|-------------------|---|
| <b>Topic</b>      | <b>Lin Hwai Min's choreography.</b>   |
| Research question | The influence of American modern dance of the mid-20th century on Lin Hwai Min's choreography.  |
| Approach          | Specific analysis of the choreography of Martha Graham and identification of the influence her work had on the choreography of Lin Hwai Min, artistic director of the Cloud Gate Dance Theatre (in Taiwan). |

Students should also demonstrate awareness of other issues surrounding the dance studied such as the following.

- Do I show an awareness of the value and limitations of the dance I am studying through analysing its origin and purpose?
- Do I show a consistently good understanding of dance in setting the research question into context and addressing it fully and effectively?

Relevant outcomes of this analysis should be integrated into the student's argument.

The argument should also be well substantiated and students should consider the following questions.

- With what evidence do I support my comments and conclusions?
- Is this evidence relevant and well founded, and not based simply on my preconceptions?

Finally, an extended essay in dance is a formal essay, so students must pay very careful attention to the requirements of the assessment criteria.

Frequent reference to the assessment criteria by both the supervisor and the student will help keep a sharper focus on the project.

## Interpreting the assessment criteria

### Criterion A: research question

Although the aim of the essay can best be defined in the form of a question, it may also be presented as a statement or proposition for discussion. It must be specific, sharply focused and appropriate to the particular area of dance being explored. It must also be centred on dance, and not on peripheral areas such as biography and social issues. It must be stated clearly early on in the essay.

Note that larger-scale dance works or groups of pieces may limit the possibility of effective treatment within the word limit.

### Criterion B: introduction

The introduction should relate the research question to existing subject knowledge. It should be clear and concise: it is not an opportunity to pad out the essay with preliminary statements of arguments that will be restated fully in the body of the essay.

### Criterion C: investigation

The range of sources available will be influenced by various factors but above all by the topic chosen. Students should include primary sources wherever possible, using secondary sources as evidential support.

The proper planning of an essay should involve interrogating source material in light of the research question, so that the views of other dancers and dance scholars are used to support the student's own argument, and not as a substitute for that argument. It may thus be helpful for a student to challenge a statement by a dancer or dance scholar, in reference to the dance being studied, instead of simply agreeing with it, where there is evidence to support such a challenge.

If students make use of internet-based sources, they should do so critically and circumspectly in full awareness of their potential unreliability.

### Criterion D: knowledge and understanding of the topic studied

Students are expected to demonstrate a knowledge and understanding of the dance, dance styles or traditions chosen within their cultural context, in terms of their historical and current practice, social, religious, political and/or intellectual significance.

### **Criterion E: reasoned argument**

Students should be aware of the need to present their essays as a logical development of an argument. Personal views should not simply be stated but need to be supported by reasoned argument to persuade the reader of their validity. Straightforward descriptive or narrative accounts that lack analysis do not usually advance an argument and should be avoided.

### **Criterion F: application of analytical and evaluative skills appropriate to the subject**

Students should convey accurate and consistent analysis and evaluation of the movement qualities and aesthetic and/or cultural intentions of the dance work(s).

### **Criterion G: use of language appropriate to the subject**

There should be evidence of familiarity with, and the accurate and effective use of, dance terminology. Some dance forms, such as ballet and East Indian dance, have particular words to describe movement and movement phrases. The meaning of these terms needs to be made clear in the essay.

### **Criterion H: conclusion**

“Consistent” is the key word here: the conclusion should develop out of the argument and not introduce new or extraneous matter. It should not repeat the material of the introduction; rather, it should present a new synthesis in light of the discussion.

### **Criterion I: formal presentation**

This criterion relates to the extent to which the essay conforms to academic standards about the way in which research papers should be presented. The presentation of essays that omit a bibliography or that do not give references for quotations is deemed unacceptable (level 0). Essays that omit one of the required elements—title page, table of contents, page numbers—are deemed no better than satisfactory (maximum level 2), while essays that omit two of them are deemed poor at best (maximum level 1).

### **Criterion J: abstract**

The abstract is judged on the clarity with which it presents an overview of the research and the essay, not on the quality of the research question itself, nor on the quality of the argument or the conclusions.

### **Criterion K: holistic judgment**

Qualities that are rewarded under this criterion include the following.

- Intellectual initiative: Ways of demonstrating this in dance essays include the choice of topic and research question, locating and using a range of sources, including some that may have been little used previously or generated for the study (for instance, transcripts of oral interviews).
- Insight and depth of understanding: These are most likely to be demonstrated as a consequence of detailed research, reflection that is thorough and well-informed, and reasoned argument that consistently and effectively addresses the research question.
- Creativity: In dance essays, this includes qualities such as new and inventive approaches to dance analysis, new approaches to “well-worn” or popular topics, or attention to new topics and questions.

## Design technology

These subject guidelines should be read in conjunction with the “Introduction”, “Outline” and “Details—all essays” sections of this guide.

## Overview

An extended essay in design technology provides students with an opportunity to undertake in-depth research into the processes involved in the design and development of products or systems, and to make an assessment of their impact on individuals and society at large.

The outcome of the research should be a coherent and structured piece of writing that effectively addresses a particular issue or research question and arrives at a particular, and preferably personal, conclusion.

Absolute reliance on textbooks and the internet is discouraged and no extended essay in design technology should be based exclusively on such sources.

## Choice of topic

The chosen topic must be clearly concerned with issues relating directly to the subject. Where the topic may be approached from different viewpoints, the treatment must be approached from a design technology perspective. Students are expected to be familiar with the design cycle, as clarified in the current *Design technology guide*.

Students are encouraged to select a topic that is appropriate to their interests and abilities, and the resources available. They should avoid topics of a purely historical nature that merely document the development of a product or technology.

Essays may focus on systems design rather than a specific product, for example:

- investigating the labelling of chemicals in transit, from the point of view of provision for dealing with accidents
- investigating and implementing a system for reducing food wastage in a school/college canteen
- evaluating the feasibility of a combined heat and power scheme for a local community.

When choosing a topic for a design technology essay, students should start by exploring appropriate design contexts. For example, it may be worth considering:

- artifacts that do not work properly or seem wasteful of resources
- the needs of particular user groups such as the elderly, infirm or disabled
- new technologies and how they might influence or combine with existing technologies.

It is essential that the topic chosen is appropriate for a design technology extended essay and not merely a review of a technological product or technological development.

The following examples of titles for design technology extended essays are intended as guidance only. Moreover, it may help if the student further defines the topic chosen for study in the form of a research question, followed by a statement of intent that indicates which broad process is going to be used in answering the question. In this way, the approach to the topic chosen may be even further clarified. Some examples of this could be as follows.

|                   |   |
|-------------------|---|
| <b>Topic</b>      | <b>Ergonomic design of telephones for the physically impaired</b>   |
| Research question | How have ergonomic factors been considered in the design of a new telephone for physically impaired people? |
| Approach          | An essay that considers how ergonomics can be used to improve the design of a new telephone.                |
| <b>Topic</b>      | <b>Bicycle design</b>   |

|                   |   |
|-------------------|---|
| Research question | Has the introduction of new materials improved the performance of modern racing bicycles?       |
| Approach          | An essay that examines the use of new materials in the design of bicycles and their components. |
| <b>Topic</b>      | <b>Automated textile production</b>   |
| Research question | Does an automated textile process provide better-quality products than a mechanized process?    |
| Approach          | An investigation into a specific automated textile production process.                          |

## Treatment of the topic

An extended essay in design technology may be based on literature, surveys or experiments. However, since design technology is an experimental science, many students will wish to base their essay on practical/experimental work, although this is not compulsory. Practical activity may take the form of:

- experiments to test materials or evaluate performance
- modelling situations and products to assess effectiveness
- prototyping design solutions
- full realization and trialling of a design solution.

Because of the visual nature of design technology, it is anticipated that many essays will be significantly enhanced by the addition of relevant graphical material.

In order to promote personal involvement in the extended essay, the use of primary sources that are locally available should be encouraged wherever possible. Data should be collected from different sources using a variety of appropriate methods, and then analysed using appropriate scientific and technological techniques, otherwise it will be of little value. Data should only be included in the essay when directly relevant to the chosen topic. It is important that the topic and research question reflect a firm emphasis on design technology, and that they do not become directed towards another subject area.

The topic should be treated at an appropriate level of study: not so specific or personalized that it has no wider social, political or organizational aspects, nor so broad that there is little potential for taking or stimulating action in the problem area.

Students should identify the key issues that emerge from the investigation and assess their significance in relation to the original proposition or question. Above all, the essay must be based on an issue that can be explored, and from which conclusions can be drawn and recommendations made.

## Interpreting the assessment criteria

### Criterion A: research question

The research question can often be best defined in the form of a question. It may, however, also be presented as a statement or proposition for discussion. It must be specific, sharply focused and appropriate to design technology. This means that it must relate to the nature of the subject and not be restricted to a descriptive account of a technological or design topic. An appropriate research question allows the essay to address comprehensively the **design cycle**. Whichever way it is formulated, it should be identified clearly as the research question and set out prominently in the introduction.



### **Criterion B: introduction**

The introduction should explain succinctly the significance of the topic and why it is worthy of investigation, and include relevant background details. The introduction should not be seen as an excuse for padding out an essay with research details and should only include relevant information related to the research question. For example, in an essay entitled “How has the impact of composite materials affected the design of bicycle wheels?”, it would not be necessary for the student to include a historical account of the development of the bicycle throughout the 20th century. However, if a particular design provided the impetus for new ideas then including that design would be relevant.

### **Criterion C: investigation**

The sources of data and information need to be clearly identified. Because of the practical nature of the subject, most successful essays will involve some form of practical activity. The sources of data may include making, then trialling an artifact, and experiments, modelling, surveys, interviews or monitoring. The essay should provide sufficient detail to allow an independent person to repeat the exercise. Students are expected to show an awareness of the limitations or uncertainties inherent in the techniques and equipment used.

### **Criterion D: knowledge and understanding of the topic studied**

This criterion relates to knowledge and understanding of the topic chosen, together with its context. Students are expected to understand clearly the scientific and technological concepts used in the extended essay.

### **Criterion E: reasoned argument**

Students should be aware of the need to present their essays as a logical development of an argument. Personal views should not simply be stated but need to be supported by reasoned argument. This argument often results from practical activity and testing. Straightforward descriptive or narrative accounts that lack analysis do not usually advance an argument and should be avoided.

### **Criterion F: application of analytical and evaluative skills appropriate to the subject**

This criterion relates to the questioning and diagnostic treatment of data and information. The most successful design technology extended essays will include a complete assessment of the design cycle, resulting in a comprehensive evaluation of the final artifact or system.

### **Criterion G: use of language appropriate to the subject**

Students are expected to make effective use of technological and scientific terminology and, where appropriate, scientific notation.

### **Criterion H: conclusion**

“Consistent” is the key word here: the conclusion should develop out of the argument and not introduce new or extraneous matter. It should not repeat the material of the introduction; rather, it should present a new synthesis in light of the discussion.

### **Criterion I: formal presentation**

This criterion relates to the extent to which the essay conforms to academic standards about the way in which research papers should be presented. The presentation of essays that omit a bibliography or that do not give references for quotations is deemed unacceptable (level 0). Essays that omit one of the required elements—title page, table of contents, page numbers—are deemed no better than satisfactory (maximum level 2), while essays that omit two of them are deemed poor at best (maximum level 1).

An extended essay in design technology lends itself to many forms of graphic presentation. Most essays are enhanced by the use of charts, tables, technical drawings, sketches and photographs. The graphical nature of many topics makes these essential. Where possible, these should appear in the body of the essay, as close as possible to

the relevant text. Hand-drawn diagrams are acceptable. Raw data obtained through experimentation, testing or surveys may be included within an appendix. Any material that is not original must be acknowledged.

### **Criterion J: abstract**

The abstract is judged on the clarity with which it presents an overview of the research and the essay, not on the quality of the research question itself, nor on the quality of the argument or the conclusions.

### **Criterion K: holistic judgment**

The most successful essays contain original thoughts and ideas, demonstrating creativity and innovation, normally resulting from practical activity. Outstanding essays demonstrate the student's ability to overcome and solve problems, and consider and evaluate a variety of alternative solutions.

## Economics

These subject guidelines should be read in conjunction with the "Introduction", "Outline" and "Details—all essays" sections of this guide.

### **Overview**

An extended essay in economics provides students with an opportunity to undertake in-depth research in economics in an area of personal interest to them. It allows students to develop research skills, to apply economic theory to real-world situations, and to analyse and evaluate the outcomes of their research. The outcome of the research should be a coherent and structured analytical essay that effectively addresses the particular research question.

### **Choice of topic**

Students should undertake an essay that uses the core principles of economics as a basis for researching a particular topic. Students should use a combination of primary and secondary research as the basis for their extended essay, and should apply the accepted theories, tools and techniques of the subject to the topic chosen.

Essays should not be historical. They should be related to economic information that is no more than three years old. Essays that are too retrospective, for example, "What was the impact of the South-East Asian crash on Thailand during 1990–1995?", almost invariably become descriptive.

Students should ensure that their research question can be answered using economic concepts and theories, and that the question does not lean too heavily towards business and management.

The topic chosen should provide opportunities for some critical analysis of the data collected. Topics that depend entirely on summarizing general secondary data should be avoided, as they are likely to lead to an essay that is essentially narrative or descriptive in nature. However, the effective use of relevant secondary data to answer the research question will be fully rewarded by the examiner.

Restricting the scope of the essay will help to ensure a clear focus, and will also provide opportunities for demonstrating detailed economic understanding and critical analysis. Choosing a research question that is made up of more than one question is unlikely to result in a successful essay—for example, "Is the café industry in Vienna an example of oligopoly and, if so, do the cafés collude with each other?" or "What is the effect of interest rate policy on aggregate demand in Greece and what should the government do to increase aggregate demand?". In the first example, the answer to the first part of the question must be affirmative in order to proceed with the essay. If not, the second part of the question cannot be answered. In the second example, the scope of the essay is simply too wide.

The following examples of titles for economics extended essays are intended as guidance only. The pairings illustrate that focused topics (indicated by the first title) should be encouraged rather than broad topics (indicated by the second title).

- “What market form characterizes the petrol supply industry in my area of Madrid?” **is better than** “What is the market structure of the Spanish petroleum industry?”.
- “What is the effect of the recent imposition of a minimum wage in Austria on unemployment in the fast food industry in Graz?” **is better than** “What has been the effect of the minimum wage on unemployment in Austria?”.
- “To what extent has the fall in the exchange rate of the US dollar affected the tourist industry in Carmel, California?” **is better than** “How has the fall in the exchange rate of the US dollar affected the US economy?”.
- “What has been the economic effect of water privatization on the farming industry in my region of Zambia?” **is better than** “How has the privatization of water affected Zambia?”.

It may help if the student further defines the topic chosen for study in the form of a research question, followed by a statement of intent that indicates which broad process is going to be used in answering the question. In this way, the approach to the topic chosen may be even further clarified. Some examples of this could be as follows.

|                   |  |
|-------------------|--|
| <b>Topic</b>      | <b>Pricing at the local supermarket</b>  |
| Research question | Will the recent policy of cutting bakery prices lead to increased revenue for the Safeway supermarket in Ryde, Sydney?   |
| Approach          | Primary research is conducted through observation and supported by secondary research, such as company records and textbooks. This results in a detailed examination of elasticity and its relationship with total revenue.              |
| <b>Topic</b>      | <b>The economic impact of privatization</b>  |
| Research question | To what extent did Matav, a Hungarian telecommunications company, become more efficient post-privatization?  |
| Approach          | Primary data is collected through interviews with company management (qualitative research) and secondary data is collected by accessing company reports. Economics texts are used for researching the economic theory of privatization. |
| <b>Topic</b>      | <b>The impact of monetary policy</b>   |
| Research question | Has the Kenyan central bank’s policy of interest rate cuts led to a rise in new car sales in Nairobi?  |
| Approach          | A consumer questionnaire (quantitative research) is circulated and interviews (qualitative research) are carried out with sales managers of new car firms. Government macroeconomic statistics (secondary research) are also accessed.   |

## Treatment of the topic

It is important that the topic and research question reflect a firm emphasis on economics, and that they do not become directed towards another subject area. Where topics could be approached from different viewpoints, such as business or history, the treatment of material must reflect an approach that uses economic theory and, therefore, meets the subject requirements of economics.

Students must choose a research question that can be treated effectively within the word limit and is not of a trivial nature. Research questions that do not allow a systematic and meaningful investigation using relevant economic theory, and do not demonstrate critical analysis and detailed understanding, are unlikely to be suitable in economics. In some instances, it may become clear at an early stage in the research that too little information is available to permit such an investigation. In such cases, a change of focus should be made.

Students may be encouraged to carry out original research on a topic within any of the syllabus sections in the current *Economics guide*. One advantage of doing an essay on a microeconomics topic is the ability to carry out primary research in the form of surveys, questionnaires or interviews. Nonetheless, it is also possible to carry out a highly successful analysis of a question related to macroeconomics, international economics or development economics, as long as the data and information collected are used to construct a clear, reasoned argument in response to a sufficiently narrow research question. The main danger of choosing a question from these areas is in choosing a research question that is inappropriately wide. In addition, it is very important that the question is original and has not already been answered in secondary sources. In this case, the danger would be that the student might simply present a summary of secondary sources rather than a new reasoned argument.

Students should integrate relevant economic theory with the evidence obtained through the research. An essay that delivers the theory as a separate section of the essay and does not apply it to the specific research question is unlikely to be successful in terms of analysis using the theory.

Good critical analysis and evaluation can be demonstrated through sound assessment and judgment of the extent to which the relevant theory is useful in answering the research question.

An extended essay in economics is a formal essay, so students must be sure to adopt **one** of the common standards of presentation of research essays.

## Interpreting the assessment criteria

### Criterion A: research question

In economics, it is strongly recommended that the research question is stated in the form of a question: this is a reliable way of avoiding excessively descriptive essays. It must be possible to answer the question using contemporary economic theory. It must be clearly focused and sufficiently narrow so that it is possible to answer it within the word limit. The question should not be trivial, nor should the answer to the question be patently obvious. It should not be a “double-barrelled” question with two parts or a “yes/no” question.

### Criterion B: introduction

The introduction should explain succinctly the significance of the subject, why it is worthy of investigation, and how the research question is appropriate for economic analysis. The introduction should not be seen as an excuse for padding out an essay with a lengthy superficial account of the reasons for choosing the subject. The student’s personal experience or particular opinion is rarely relevant here.

### Criterion C: investigation

The range of resources available will be influenced by various factors, but above all by the topic. At the very least, there should be some evidence that appropriate economic sources have been consulted.

Wherever possible, primary sources should be used, with secondary sources as evidential support. Statistical data collected from books or the internet (for example, from national statistical agencies, the IMF, the ILO, the World Bank, the WTO) may be very valuable and can be effectively used to answer the question.

If surveys are carried out, the questions must reflect appropriate and sensible economic analysis. For example, any conclusions about the elasticity of demand for a good would be highly suspect if a survey asked about the hypothetical change in a quantity demanded based on a hypothetical change in price.

Good planning may be demonstrated by the use of appropriate information to support a well-structured argument. The essay should not include theory or information that is not used to answer the research question directly. For example, it would not be appropriate to include large sections of textbook economic theory without showing how and why the theory can be applied to the particular research question.

**Criterion D: knowledge and understanding of the topic studied**

Having chosen a topic of interest and carried out an appropriate amount of research, the student should be able to demonstrate in-depth knowledge of the topic. This is another reason why the research question has to be suitably focused. The essay should be comprehensive and thorough.

Axes and curves/lines on diagrams should be fully labelled. Relationships between curves/lines should be accurately drawn. For example, the relationship between marginal and average values should always show the correct mathematical link. If appropriate, there should be an appreciation of the ideological underpinning of a diagram. For example, an essay looking at demand management as a way of reducing unemployment should use an appropriate AS curve.

**Criterion E: reasoned argument**

It should be evident throughout the entire essay that the research question is being answered. Relevant economic theory, concepts and data/information must be integrated in a logical and coherent manner. A valid and persuasive argument needs to be developed in a clear and structured way, with some awareness that there may be alternative viewpoints.

**Criterion F: application of analytical and evaluative skills appropriate to the subject**

Data/information must be used in the context of appropriate economic concepts and theories. Effective analysis occurs if the information gathered is examined using economic theories. Essays that are highly descriptive will score poorly here.

Students should show critical awareness of the validity of their information and the possible limitations of their argument. Very importantly, the essay should clearly note any assumptions that have been made in setting out the argument and reaching the conclusions.

Diagrams should rarely be included if there is no evidence to support their relevance to the research question. For example, an essay looking at a non-collusive oligopoly should not indiscriminately include a kinked demand curve if there is no evidence of the behaviour associated with such a curve.

If theories or diagrams are included that are not supported by evidence, the student should note that the situation might be explained by the theory, but that there is no evidence to prove firmly that the theory is valid. For example, where it appears that a firm is operating in a monopolistically competitive market and is not making abnormal profits but the student does not have proof of this, then the explanation should make clear that it is an assumption and that it has not been empirically proven.

Diagrams must be integrated into the essay. Real data should be used on diagrams wherever possible. For example, if the essay is about using taxes to reduce the negative externalities caused by smoking in Canada, then the y-axis should show “the price of cigarettes (C\$ per package)” and any real numbers (for example, 25% tax) should show on the diagram. When real values are known, they should be shown.

**Criterion G: use of language appropriate to the subject**

It is extremely important that economic terminology is used and that definitions of key terms are provided. This will clearly enhance the academic tone of the essay.

Definitions should be precise. For example, a discussion of elasticity should refer to percentage or proportionate changes as opposed to “big” or “small” changes.

### **Criterion H: conclusion**

“Consistent” is the key word here: the conclusion should develop out of the argument and not introduce any new material. Any obvious limitations to the analysis/argument should be restated here, as evidence of critical awareness. For example, if a survey is carried out but the sample size is deemed to be rather small, then it could be stated that the sample size might limit the validity of the conclusion drawn. If interviews are carried out, it could be noted that the ideological bias of the interviewees might limit the validity of the conclusions drawn.

### **Criterion I: formal presentation**

This criterion relates to the extent to which the essay conforms to academic standards about the way in which research papers should be presented. The presentation of essays that omit a bibliography or that do not give references for quotations is deemed unacceptable (level 0). Essays that omit one of the required elements—title page, table of contents, page numbers—are deemed no better than satisfactory (maximum level 2), while essays that omit two of them are deemed poor at best (maximum level 1). Additionally, if diagrams are poorly presented or if the information shown on the diagram is unclear, one mark should be deducted.

### **Criterion J: abstract**

The abstract is judged on the clarity with which it states the research question, explains how the investigation was carried out and summarizes the conclusion. However, the quality of the research question or the conclusion is not judged here. For example, an essay with a very broad research question, such as “What were the effects of the Asian financial crisis?”, is likely to score poorly on several of the criteria simply because it is far too broad and unfocused. However, if the student clearly states the (poor) question and includes the other two required elements, then the abstract can still receive full marks.

### **Criterion K: holistic judgment**

Qualities that are rewarded under this criterion include the following.

- Intellectual initiative: Ways of demonstrating this in economics essays include undertaking appropriate primary research, for example, the construction of a meaningful and relevant survey with an appropriate sample, **or** interview(s) with relevant people, drawing meaningful conclusions based on an analysis of a large amount of statistical data and the choice of an original topic (although it should be noted that less original topics should not be penalized here).
- Insight and depth of understanding: These are most likely to be demonstrated as a consequence of making mature and balanced conclusions from the research undertaken, showing awareness of the limitations of the research and evaluating the applicability of economic theory.

## **Environmental systems and societies**

These subject guidelines should be read in conjunction with the “Introduction”, “Outline” and “Details—all essays” sections of this guide.

### **Overview**

Environmental issues are occupying a position of increasing significance on the world agenda, and an extended essay in environmental systems and societies provides students with an opportunity to explore an environmental topic or issue of particular interest or relevance to themselves and their localities. Since the subject is a multidisciplinary one, the student will need to select and integrate theoretical contexts and methodologies from those academic disciplines appropriate to the chosen topic. In this respect, a systems approach is considered particularly effective, and students will be expected to show some employment of this approach in the analysis and interpretation of the data gathered.

## Choice of topic

Environmental systems and societies focuses upon the interaction and integration of “natural” environmental systems and human societies. An essay in this subject should likewise focus on this relationship. It should not deal exclusively with ecological processes or with societal activities, but instead should give significant (though not necessarily equal) weight to both these dimensions. A topic should be chosen that allows the student to demonstrate some grasp of how **both** environmental systems **and** societies function in the relationship under study. For example, while the environmental systems and societies syllabus includes a study of pure ecological principles, in an extended essay it would have to be explored within the context of some human interaction with the environmental system. Similarly, while the syllabus includes a range of philosophical approaches to the environment, in the extended essay, these would need to be addressed in relation to specific natural systems. Great care should be taken, therefore, to ensure that the topic chosen would not be better submitted under one of the more specialized subject areas of either the experimental or the human sciences. This would invariably apply, for example, to topics focusing exclusively on human health, disease or politics.

A crucial feature of any suitable topic is that it must be open to analytical argument. If the topic chosen fails in this regard, and lends itself only to a descriptive or narrative treatment, then the student will be denied a large proportion of the available credit according to the assessment criteria. For example, it would be of minimal value simply to **describe** a given nature reserve; it would be necessary to **evaluate** its relationship with a local community possibly, or **compare** its achievement with original objectives or with a similar initiative elsewhere. The topic must, in some way, leave room for an argument that students themselves construct and support from their own analysis of the information, rather than simply reporting analysed data obtained from other sources.

There are also some topics that should be considered unsuitable for ethical or safety reasons. For example, experiments likely to inflict pain on living organisms, cause unwarranted environmental damage or put pressure on others to behave unethically must be avoided. Similarly, experiments that pose a threat to health, possibly using toxic or dangerous chemicals, or putting oneself at physical risk during fieldwork, should be avoided unless adequate safety apparatus and qualified supervision are available.

A further critical feature of a successful topic is the sharpness of its focus. If a topic is too broad, it will inevitably lead to a relatively superficial treatment that, again, is likely to penalize the student right from the start. In topics that are too broad, it is unlikely that students will be able to produce any significantly fresh analysis, arguments or meaningful conclusions of their own. To clarify the distinction between a broad and a sharply focused topic, the following examples of titles for environmental systems and societies extended essays are intended as guidance only. The pairings illustrate that focused topics (indicated by the first title) should be encouraged rather than the broad topics (indicated by the second title).

- “The ecological recovery of worked-out bauxite quarries in Jarrahdale, Western Australia” **is better than** “Environmental effects of mining”.
- “A comparison of the energy efficiency of grain production in The Netherlands and Swaziland” **is better than** “Efficiency of world food production”.
- “The comparative significance of different sources of carbon dioxide pollution in New York and Sacramento” **is better than** “Impacts of global warming”.
- “Managing the environmental impact of paper use at a Welsh college” **is better than** “Paper recycling”.

It may further assist a student in refining the focus of their research if, beyond the topic and research question, he or she also produces a succinct statement outlining the overall approach of the investigation. Some examples of this might be the following.

|              |   |
|--------------|---|
| <b>Topic</b> | <b>Impact of exotic plants on herbivore diversity in Tanzania</b> |
|--------------|---|

|                   |   |
|-------------------|---|
| Research question | To what extent does the length of time after an exotic plant has been introduced to an area, and the latitude from which it originates, affect the diversity of herbivores found feeding on it? |
| Approach          | A fieldwork investigation into the diversity of epiphytic herbivores on a range of exotic plants in the Kilimanjaro region, linked to a brief historical study of each plant's introduction.    |
| <b>Topic</b>      | <b>Evaluating the philosophical aims and achievement in local conservation</b>  |
| Research question | To what extent are the philosophical principles and objectives of a local conservation group being fulfilled in protecting the local environment?   |
| Approach          | An analysis of literature and attitudes from a conservation group, along with a quantitative analysis of records of environmental quality.  |
| <b>Topic</b>      | <b>The ecological footprint of the school canteen</b>   |
| Research question | From the major inputs and outputs of the school canteen, what overall estimate of its environmental impact can be made in terms of an ecological footprint?                                     |
| Approach          | An analysis of records and practical measurements assessing the inputs and outputs of the canteen, and a synthesis of data into a holistic model indicating the environmental impact.           |

For some investigations, particularly those that are experimental, a clearly stated hypothesis may be just as acceptable as, and possibly better than, a research question.

### Treatment of the topic

An extended essay in environmental systems and societies may be investigated either through primary data collection (from fieldwork, laboratory experimentation, surveys or interviews) or, alternatively, through secondary data collection (from literature or other media). It may even involve a combination of the two, although, given the limited time available and word limit for the essay, the emphasis should be clearly with one or the other to avoid the danger of both becoming rather superficial.

If the essay is focused largely on the collection of primary data, the student needs to exercise great care in selecting appropriate methods of data collection and carrying them out effectively. Before commencing the investigation, students should explore literature relating to their methodology, and also any pertinent research that may give them guidelines and useful points of theoretical comparison. Hence, even in an investigation based exclusively on primary data, the bibliography should indicate at least some recognition of secondary sources, perhaps supporting the choice and implementation of methods or providing an academic context for the conclusions.

If the essay is focused on secondary data, the student needs to take great care in selecting sources, ensuring that there is a sufficient quantity and range, and that they are all reliable. There is a great mass of populist, journalistic, partisan and unfounded claims available through the internet and other media. The student must take on the task of sorting through these and using only those sources that have some academic credibility. An essay of this type would normally be expected to produce a substantial bibliography and not be limited to just a few sources.

From whatever sources the data has been collected, it is vital that students are involved in producing their own analysis of the data and arguing their own conclusions. This will happen more naturally if the essay is based on primary data since the data will not have been previously analysed. A source of secondary data, however, may come with its own analysis and conclusions. In this case, it is essential that students further manipulate this data, or possibly synthesize it with other sources, so that there is clear evidence in the essay of the student's personal involvement in analysis and drawing of conclusions. Whether using primary or secondary data, students should construct their own critical arguments by using and evaluating the sources available to them.



Finally, a central theme in the environmental systems and societies syllabus is the systems approach, and this should be reflected to some degree in the extended essay. The essay should include an attempt to model, at least partially, the system or systems in question. The term “model” in this context is intended in its broadest sense to include, for example, mathematical formulae, maps, graphical representations and flow diagrams. Systems terminology should also be used where appropriate.

## Interpreting the assessment criteria

### Criterion A: research question

To meet this criterion, a sharply focused research question defining the purpose of the essay must be stated clearly within the introduction. It is not sufficient simply to include it on the title page or in the abstract. To make “effective treatment possible”, first, it must not be too broad, which will lead to superficial treatment. Second, it must allow for critical argument, and not simply require a descriptive or narrative treatment. For example, “To what extent is X like Y?” allows for argument, whereas “What is X like?” only invites simple description.

In this subject, it can be quite acceptable to formulate the research question as a clearly stated hypothesis. This may be particularly appropriate, for example, in experimental investigations. A hypothesis, as the starting point of an experimental investigation, will always lead to the implicit critical argument concerning the extent to which the results support or refute it.

### Criterion B: introduction

The introduction should set the research question or hypothesis in context. For example, it might outline necessary theoretical principles on which the topic depends, summarize other related research conclusions, or give a brief history or geographical location of the issue under discussion. The introduction should also indicate the significance of the question being researched—Why is it important to answer it? What value might it have to others? What implications could the findings have?

It is also important that the introduction does not become too long. Material should only be included where it is directly required in order to follow the overall argument of the essay.

### Criterion C: investigation

Where the study involves experimentation or practical fieldwork, a detailed description of the procedures used, possibly with diagrams or photographs, should be given, such that an independent worker could effectively repeat the study. Careful attention should be given to the design of experiments to include use of, for example, quantification, controls, replication and random sampling, where appropriate. The selection of techniques should be explained and justified, and any assumptions upon which they depend should be clearly stated.

If the study is based on the research of secondary data, students need to ensure that the selection of sources is sufficiently wide and reliable. Where internet-based sources are used, for example, students should be particularly aware of their potential unreliability. Their process of selecting sources and data should be described and justified, and, in cases where there is a variety of relevant perspectives held, the selection of sources should reflect this. Where appropriate, there should be an indication of the methods by which the secondary data has been generated or the evidence upon which it is founded.

### Criterion D: knowledge and understanding of the topic studied

Students are expected to have a sound knowledge and understanding of environmental systems and societies, as detailed in the current *Environmental systems and societies guide*. For many topics, this knowledge will need to be supplemented through independent study. Ultimately, the student should possess sufficient knowledge of the topic to handle the issues and arguments effectively. To score highly on this criterion, a student would also need to show clear and perceptive links between their own study and the body of theoretical knowledge associated with this subject.

### **Criterion E: reasoned argument**

There should be a clear step-by-step logical argument linking the raw data to the final conclusions. Each step or proposition on the way should be defended against any plausible alternatives and potential criticisms with clear evidence. Personal opinions are acceptable, but again should be convincingly substantiated by the available evidence. The argument must directly answer the research question in the precise way that it has been formulated.

### **Criterion F: application of analytical and evaluative skills appropriate to the subject**

Analytical skills can be demonstrated in the selection, manipulation and presentation of quantitative or qualitative data gathered from either primary or secondary sources. They will be most obviously apparent in the employment of such things as graphical representations, mathematical manipulations or flow diagrams. Analytical skills may also be evident in the student's ability to select specific data from sources, identifying their relevance and relationships to one another, and reorganizing them into an effective verbal argument.

Evaluative skills will be apparent in the students' reflections on the reliability and validity of the data gathered, and their subsequent interpretations. For essays concerned largely with collecting primary data, this will involve discussing inadequacies in the experimental design, the validity of assumptions made, limitations of the investigation, and any systematic errors and how they might have been avoided. For essays concerned largely with collecting secondary data, similar considerations should be applied to the sources that were accessed.

### **Criterion G: use of language appropriate to the subject**

Students are expected to use appropriate scientific and systems terminology, as employed in the current *Environmental systems and societies guide*.

### **Criterion H: conclusion**

It is highly recommended that this aspect of the essay is given a separate section with its own heading. It should contain a brief, concise statement of the conclusion that is in direct response to the research question or hypothesis. This should not involve new information or arguments, but should be a summary of what can be concluded from, and is supported by, the evidence and argument already presented.

In addition to the concluding statement, students should identify outstanding gaps in their research or new questions that have emerged and deserve further attention.

### **Criterion I: formal presentation**

This criterion relates to the extent to which the essay conforms to academic standards about the way in which research papers should be presented. The presentation of essays that omit a bibliography or that do not give references for quotations is deemed unacceptable (level 0). Essays that omit one of the required elements—title page, table of contents, page numbers—are deemed no better than satisfactory (maximum level 2), while essays that omit two of them are deemed poor at best (maximum level 1).

Particular attention should be paid to the use of graphs, diagrams, illustrations and tables of data. These should all be appropriately labelled with a figure or table number, a title, a citation where appropriate, and be located in the body of the essay, as close as possible to their first reference. Any downloaded or photocopied material included should be clearly legible.

### **Criterion J: abstract**

The abstract is judged on the clarity with which it presents an overview of the research and the essay, not on the quality of the research question itself, nor on the quality of the argument or the conclusions.

### **Criterion K: holistic judgment**

This criterion invariably favours those students who have some direct involvement or personal contact with the environmental issue under study, and this should be encouraged wherever possible. It is more challenging for a

student to clearly demonstrate personal engagement, initiative and insight in a topic with which their sole contact has been through the internet or library bookshelves.

“Intellectual initiative” may be apparent in the formulation of a novel and penetrating research question, or in the design or inventive modification of an experimental procedure, or in a creative identification and selection of secondary source material, for example. A major theme of this subject is the interrelatedness of systems and components within them, and many common principles can be applied to a wide variety of systems. An essay that overtly recognizes these underlying principles and the interrelatedness of components will most clearly demonstrate an element of the “insight and depth of understanding” referred to in this criterion.

## Film

These subject guidelines should be read in conjunction with the “Introduction”, “Outline” and “Details—all essays” sections of this guide.

### Overview

An extended essay in film provides students with an opportunity to undertake an in-depth investigation into a topic of particular interest to them. Students are encouraged to engage in diligent, serious, personal research, and to develop and explore in a disciplined and imaginative way an area of study specifically appropriate to film or television.

Moving images are part of the everyday international currency of information and entertainment. Audiences everywhere, young and old alike, respond with increasing sophistication to the ways that stories and messages are presented. Complex skills are involved in the interpretation and enjoyment of film, but critical understanding of how images tell stories, create emotional responses and give information is less widely developed.

The study of film in an international context also allows students to broaden their vision of film culture beyond the dominance of Hollywood or popular network television images, in keeping with the spirit of intercultural understanding promoted by the IB.

### Choice of topic

The first and most critical stage in preparing for the extended essay is the choice of a suitable topic and students need appropriate guidance in making their final choice. The topic for an extended essay in film must be one that clearly focuses on film (or television) rather than another subject area. For instance, a study of film adaptations of Shakespeare’s plays or of classic novels must not become an essay about the plays or the novels from a purely literary point of view, instead of a discussion about the films from a filmic point of view.

The scope of the topic and the framing of the research question must be given careful consideration. The topic needs to offer enough scope to provide material for a substantial essay without being too general. It needs to be one that captures the interest and enthusiasm of the student. Establishing a topic, however, is not enough. The essay also needs to have a sharp focus within the topic and the student has to be perfectly clear about the following issues.

- What important question about the topic will the essay answer?
- What major arguments or points of view about the topic will be developed or proven in the course of the essay?
- What needs to be said about the topic?
- What will the reader be led to understand about it?
- How might the ideas discussed be supported by evidence?

- What evidence will be appropriate?

Students should avoid developing ideas around the topic and research questions that have been addressed fully in earlier academic studies unless they propose to examine existing views and argue against them to a greater or lesser degree. Earlier studies must be used as a basis for discussion and not be merely replicated.

Students should be firmly advised to avoid topics that are:

- mainly dependent upon summarizing secondary sources
- likely to lead to approaches that are essentially narrative or descriptive
- too general and not well focused
- more appropriate to other subject areas.

Students should check very carefully, before embarking on a topic, that they have sufficient sources to support a substantial essay and that they have access to these sources when they need them. Early planning is essential.

Please note: Students who are taking the Diploma Programme film course must exercise care in selecting the material for their extended essay to ensure that it does not overlap significantly with any other work the student is preparing to submit for examination. The extended essay should not be based, for instance, on the same films the student has studied for the independent study assessment or for the presentation.

The following examples of titles for film extended essays are intended as guidance only. The pairings illustrate that focused topics (indicated by the first title) should be encouraged rather than broad topics (indicated by the second title).

- “A comparison of the treatment and depiction of the family in the films of Satyajit Ray and mainstream Hindi films” **is better than** “The role of the family in Indian cinema”.
- “The contribution of Nino Rota’s composition to the films of Fellini (or Morricone–Leone, Williams–Lucas)” **is better than** “Effective composer–director relationships”.
- “Goddess and vampire: two female archetypes in Hollywood cinema” **is better than** “Women in film”.
- “The continuation and extension of silent film comedy in the films of Jacques Tati” **is better than** “The comedy of Jacques Tati”.

## Treatment of the topic

Clarity, coherence of ideas and attention to detail are all necessary to achieve an effective treatment of a film topic in an extended essay. To ensure a suitable treatment of the topic, it is essential to construct a well-formulated research question that allows the student to develop an essay that is cogent, rational, and economical in expression. Ideas should be supported by relevant sources and specific reference to film and/or television texts.

For primary sources, there must be detailed references to at least one film (or major television work). Primary sources could consist of the film(s), the script, the screenplay, the score, personal contacts, or personal correspondence with individuals involved in making the film.

For secondary sources, there must be close references to relevant sources (print and other media) related to the essay’s title. Secondary sources could include journal and magazine articles, reviews, DVD “extras”, second unit material, promotional material, internet material.

Once the topic and research question have been selected, students should ask themselves the following questions.

- Is the topic one that will lead me to write a critical essay about film, film theory and history without offering temptations for irrelevant digressions into other areas?
- Is the research question well enough focused to allow for a thorough analysis within the word limit of the essay?
- Does the research question provide opportunities for me to write an essay that will meet the highest levels in the assessment criteria?

Making a schedule for writing the essay will help students both meet deadlines and avoid a last-minute rush to finish. Itemizing the stages of essay preparation (topic selection, research, drafting, polishing and finishing) in a timeline and leaving extra time for unforeseen problems is one way of ensuring the best work. Time for consultation with a supervisor or mentor needs to be built into the process. Students should remember the cardinal rule of scheduling: Planning for just enough time will leave you short of time; plan for too much time, instead.

Essays must focus on developing, supporting and illustrating their argument, rather than on plot summary or character description. The essay should focus on the evaluation of the arguments in the sources rather than simply on repeating what the sources have to say. Essays should not rely too heavily on a single secondary source or on a number of items from a single author. A broad range of ideas from different sources should be explored.

The use of accurate terminology is an essential requirement of an extended essay in film. Students must pay close attention to the accurate and appropriate use of filmic terms. It is quite appropriate in an essay on film to include elements such as drawings, diagrams, storyboard frames or camera layouts to illustrate the text. All such references must be properly acknowledged, together with all other source materials, in a properly structured list of sources at the end of the essay.

Given all this, it is important to note that the most successful essays are often those with a clear voice that transmits the student's enthusiasm and scholarship with clarity and conviction. The extended essay should reflect a coherent and informed engagement with the student's chosen topic.

The following examples are intended as guidance only.

|                   |  |
|-------------------|--|
| <b>Title</b>      | <b>Clint Eastwood as auteur</b>  |
| Research question | To what extent can Clint Eastwood be considered an auteur?   |
| Approach          | An investigation into the origins of auteur theory and a discussion of whether Clint Eastwood's work qualifies him to be considered an auteur, with specific reference to <i>Play Misty For Me</i> (1971), <i>The Outlaw Josey Wales</i> (1976), <i>Bird</i> (1988) and <i>Million Dollar Baby</i> (2004). |
| <b>Title</b>      | <b>Neo-noir in colour</b>  |
| Research question | To what extent do the films <i>Chinatown</i> (1974), <i>Blood Simple</i> (1984) and <i>Pulp Fiction</i> (1994) qualify as film noirs?  |
| Approach          | An investigation into the origins and characteristics of the films classified as film noir, and an assessment as to how far the films listed above can be defined as belonging to the same genre or style.   |
| <b>Title</b>      | <b>From <i>Hill Street Blues</i> to <i>CSI</i></b>   |
| Research question | What has been the influence of <i>Hill Street Blues</i> on subsequent US television crime drama such as <i>NYPD Blue</i> and <i>CSI</i> ?  |
| Approach          | An investigation into the impact that <i>Hill Street Blues</i> has had upon the content and style of subsequent crime drama on American television, with particular reference to specific episodes of  |

|                   |   |
|-------------------|---|
|                   | <i>NYPD Blue</i> and <i>CSI</i> , and the extent to which this has influenced the overall nature of the programmes.   |
| <b>Title</b>      | <b>African film and cultural independence</b>   |
| Research question | To what extent have the films of Ousmane Sembene been able to retain a truly indigenous style and content in the face of pressures to make films more acceptable for an international market?   |
| Approach          | An investigation into how Ousmane Sembene's films have achieved and maintain international status in world cinema, with particular reference to the narrative and visual style of <i>Xala</i> (1974), <i>Guelwaar</i> (1992) and <i>Moolaade</i> (2004).  |
| <b>Title</b>      | <b>Ang Lee as an international film-maker</b>   |
| Research question | To what extent do the films of Ang Lee enable him to be considered a truly international film-maker?  |
| Approach          | An investigation into what has enabled Ang Lee to become a significant contemporary director with films from very different cultural contexts, with particular reference to <i>Yin shi nan nu—Eat Drink Man Woman</i> (1994), <i>Sense and Sensibility</i> (1995), <i>Wo hu cang long—Crouching Tiger, Hidden Dragon</i> (2000) and <i>Brokeback Mountain</i> (2005). |

## Interpreting the assessment criteria

### Criterion A: research question

The research question can often be best defined in the form of a question. It may, however, also be presented as a statement or proposition for discussion. It must be:

- specific and sharply focused
- appropriate to the particular area of film being explored
- centred on film, not on peripheral issues such as biography or social discourses
- stated clearly early on in the essay.

### Criterion B: introduction

The introduction should relate the research question to existing subject knowledge: the student's personal experience or particular opinion is rarely relevant here.

The introduction should not be used to pad out an essay with a lengthy account of the context of the films chosen.

### Criterion C: investigation

The range of resources available will be influenced by various factors, but above all by the topic.

Students should use, in the first instance, the primary sources of the films and/or television programmes themselves, with secondary sources such as textbooks, reviews, websites and DVD "extras" as evidential support.

The proper planning of an essay should involve interrogating source material in light of the research question, so that the views of academics and theorists are used to support the student's own argument, and not as a substitute for that argument. It may thus be helpful for a student to challenge statements made in reference to the films being studied, instead of simply agreeing with them, where there is evidence to support such a challenge.

### **Criterion D: knowledge and understanding of the topic studied**

Students should demonstrate knowledge and understanding of the films and/or television programmes chosen, together with their historical, social and cultural, as well as academic, contexts. Wherever possible, this knowledge should be based at least partially on primary sources.

### **Criterion E: reasoned argument**

Students should be aware of the need to give their essays the backbone of a developing argument. Personal views should not simply be stated but need to be supported by reasoned argument to persuade the reader of their validity. Straightforward descriptive or narrative accounts that lack analysis do not usually advance an argument and should be avoided.

### **Criterion F: application of analytical and evaluative skills appropriate to the subject**

Students should demonstrate an accurate and consistent application of appropriate textual analysis to illuminate specific aspects of the films and/or television programmes chosen, demonstrating an understanding and a persuasive personal interpretation of the subject matter. The key concept here is to address how moving-image texts in film and/or television create or construct meaning, and to evaluate how others have interpreted such meanings.

If students make use of internet-based sources, they should do so critically and circumspectly in full awareness of their potential unreliability.

### **Criterion G: use of language appropriate to the subject**

Specifically filmic terminology must be used wherever appropriate.

### **Criterion H: conclusion**

“Consistent” is the key word here: the conclusion should develop out of the argument and not introduce new or extraneous matter. It should not repeat the material of the introduction; rather, it should present a new synthesis in light of the discussion.

### **Criterion I: formal presentation**

This criterion relates to the extent to which the essay conforms to academic standards about the way in which research papers should be presented. The presentation of essays that omit a bibliography or that do not give references for quotations is deemed unacceptable (level 0). Essays that omit one of the required elements—title page, table of contents, page numbers—are deemed no better than satisfactory (maximum level 2), while essays that omit two of them are deemed poor at best (maximum level 1).

Filmographies should be included where appropriate; illustrations (including thumbnail screen grabs) and tables and charts, if relevant, should appear in the body of the essay, as close as possible to their first reference.

### **Criterion J: abstract**

The abstract is judged on the clarity with which it presents an overview of the research and the essay, not on the quality of the research question itself, nor on the quality of the argument or the conclusions.

### **Criterion K: holistic judgment**

Qualities that are rewarded under this criterion include the following.

- Intellectual initiative: Ways of demonstrating this in film essays include the choice of topic and research question, locating and using a wide range of sources, including some that may have been little used previously or generated for the study (for instance, transcripts of oral interviews).
- Insight and depth of understanding: These are most likely to be demonstrated as a consequence of detailed research, reflection that is thorough and well informed, and reasoned argument that consistently and effectively addresses the research question.

- Creativity: In film essays, this may include qualities such as comparison of filmic features, inventive approaches to textual analysis, and new approaches to popular topics.

## Geography

These subject guidelines should be read in conjunction with the “Introduction”, “Outline” and “Details—all essays” sections of this guide.

### Overview

An extended essay in geography provides students with an opportunity to apply a range of skills to produce an independent and in-depth geographical study. The nature of an extended essay in geography is characterized by a spatial emphasis and the application of geographical theory and methodology.

### Choice of topic

It is important that the topic of the essay has a geographical emphasis and is not more closely related to another discipline. It is the task of the supervisor to ensure that the research question leads the student along a path that utilizes appropriate geographical sources, and that encourages the application of relevant geographical concepts, theories or ideas. The essay topic may well relate to an area of the Diploma Programme geography course but this is not a requirement and other areas of the subject may be explored.

The scope of the essay should not be too broad: such essays are rarely successful. The best research questions are well focused, thus encouraging analysis in depth rather than breadth. It is also important that the geographical context of the essay is well established early in the essay.

Investigations carried out at a local scale usually score the highest marks. This narrow focus discourages an over-reliance on published materials and encourages original research. Essays conducted in an area that is familiar and accessible to the student have a much greater chance of achieving success through a more personal involvement, which, in turn, encourages a greater in-depth study.

A sound methodology including the collection of high-quality data is the foundation of a good geography essay. Good data gives the student the scope for the type of in-depth analysis that characterizes the very best pieces of work. It is rare for an essay that is based entirely on published textbooks to score highly.

The following give some indication of the possible range of titles, research questions and approaches that can be considered.

|                   |   |
|-------------------|---|
| <b>Title</b>      | <b>Development disparities in Vietnam</b>   |
| Research question | To what extent does regional development in Vietnam reflect the core–periphery concept?   |
| Approach          | Data collection of a range of development statistics for each Vietnamese province allows the construction of the student’s own index of development levels pertinent to Vietnam. Provincial levels of development are mapped and the resulting pattern is compared with the core–periphery model. |
| <b>Title</b>      | <b>Temperature variation in Vienna, Austria in the 20th century</b>   |
| Research question | What temperature variations occurred in Vienna during the 20th century and can these be linked to variations in solar energy output?  |



|                   |  |
|-------------------|--|
| Approach          | Temperature records for the years 1900–1999 for Vienna are used to establish trends during that period. Variations from the century mean are calculated in order to identify warming and cooling periods. These are then correlated with annual sunspot totals, which are used as an indicator of solar energy output, in order to explain the periodic variations in temperature.   |
| <b>Title</b>      | <b>Changes in population structure in the Czech Republic</b>   |
| Research question | How has the fall of communism changed the population structure of the Czech Republic and what will be the social and economic effects of this?   |
| Approach          | Population statistics for age cohorts are gathered for the periods before and after 1989, along with data for birth and death rates and life expectancy. Trends in the percentage of population in various groups (active, dependent, young, aged) are established and projected up to the year 2030. Differences in these trends before and after 1989 are noted, and the consequences for the Czech Republic of falling birth rates and an aging population are evaluated.   |
| <b>Title</b>      | <b>Differences in quality of life in the city of Geneva, Switzerland</b>   |
| Research question | To what extent does the quality of life in selected communes in the city of Geneva vary with distance from Lac Lemman?   |
| Approach          | Six communes are selected, some near the lake and others at a distance away. Three transect lines are drawn through each commune and systematic sampling is carried out with regard to the quality of the environment. A points system is devised using determinants such as landscape quality, litter, vandalism, industry, traffic, noise and air pollution, education and health facilities, shops, restaurants and access to open space. Each commune is given a score that is then correlated with distance from the lake. Published data regarding income levels and house size is also used to determine the quality of life of each commune and again related to distance from Lac Lemman. |

## Treatment of the topic

It is important that an extended essay in geography is not seen as just an extended piece of fieldwork. Although there may be some similarities in approach, the extended essay need not place so strong an emphasis on primary field data. In fact, many successful research topics are based on published data. The emphasis, therefore, should be more on written analysis, interpretation, evaluation and the development of an argument than on the techniques of data collection and processing. It is vital that the methodology of the essay is tailored to the research question and allows for an in-depth investigation.

Appropriate resources for an extended essay in geography could include both primary and secondary data—books, newspapers and magazines, interviews, the internet, maps, aerial photographs and satellite images, digital landscape simulations, video, CD, DVD, GIS, diagrams and models.

The geographical context in which the research is being conducted should be clearly outlined, usually with the aid of one or more maps and, where relevant, photographs or satellite images.

Geographical data is of little value unless it is analysed, using appropriate geographical, statistical, graphical or qualitative techniques, and then critically evaluated.

### Illustrations and maps

It is essential that a geography extended essay is supported by appropriate methods for illustrating information/data, such as diagrams, sketch maps, tables and graphs. Wherever these are derived from other sources, these sources must be acknowledged.

Good essays usually have maps near the start to place the investigation in a clear geographical context. All maps should give an indication of orientation and scale, and include a key. Any maps derived from other sources should be clearly marked with the map reference number and the publisher, and the source of any base maps that have not been constructed by the student should be given. Using only photocopied maps, or those printed from commercial computer software, is rarely effective and provides little evidence of map skills.

The use of sketch maps and labelled or annotated diagrams as support information is highly encouraged. Maps constructed by the student on a computer are to be encouraged and it is a good idea to state the software program used. Hand-drawn maps should be neat and clear, and employ the use of colour shading, a scale and a key where appropriate.

Photographs, if included, should be essential to the essay and not included merely for decoration. As such, they should be labelled or carry a written explanation of the points they are intended to illustrate.

## **Interpreting the assessment criteria**

### **Criterion A: research question**

The research question must be focused, appropriate to the subject of geography, give the essay a spatial context and encourage an investigative approach. In geography, many successful essays develop the research question through the formulation of a hypothesis or hypotheses. If students do this, it is important to ensure that hypotheses are well constructed, testable, have a basis in geographical theory and involve appropriate investigative channels. The best essays have a limited number of hypotheses. Too many hypotheses can result in an essay that is unfocused or fragmented.

It is equally acceptable for the research question to examine a geographical issue, conflict or problem, which may be formulated as a proposition or statement for discussion.

The research question must be clearly stated in the abstract and in the introduction. It must be framed in a way that discourages a descriptive or narrative approach, and that encourages argument and discussion.

### **Criterion B: introduction**

It is important to put the research question into a locational and theoretical context. The introduction should, therefore, clearly outline the scale and location of the investigation, and demonstrate how the topic relates to current geographical knowledge and theory. An indication should be given as to why the topic was chosen and why it warrants investigation. The introduction should be clear and concise. Care must be taken to avoid over-lengthy discourses on theoretical background.

### **Criterion C: investigation**

It is important that the investigation uses a range of sources of information that may include data such as those listed in the "Treatment of the topic" section. The information selected must be relevant to the topic and should provide the evidence that will be used to support the argument. The essay must use data/information that is sufficient (in quality and quantity), for example, questionnaires must have enough respondents to make the findings valid. It is not essential, however, that fieldwork data forms the basis of the investigation: published data sources are also valid.

The proper planning of the essay involves the adoption of a methodology that begins with the collection and selection of appropriate information, leads to a systematic analysis with valid results, interpretation and conclusions, and ends with a critical evaluation of the evidence and the approach adopted.

### **Criterion D: knowledge and understanding of the topic studied**

Knowledge and understanding of the theoretical background and an awareness of the academic context are essential to a good essay. This should be achieved through the integration of the student's own ideas with current geographical thought, using both primary and secondary sources.

### **Criterion E: reasoned argument**

Essays that are largely narrative or descriptive cannot score highly on this criterion. The best essays develop an argument, backed up with evidence, to convince the reader of the validity of their findings. The argument may be personal, but at the same time must remain logical and balanced. In geography, evidence may be presented in graphic as well as written form, using appropriate maps, diagrams, sketches, photographs and charts/graphs.

Where relevant, the argument should present evidence that leads towards the acceptance or rejection of the original hypotheses. In the context of the investigation of an issue, conflict or problem, bias should be avoided.

### **Criterion F: application of analytical and evaluative skills appropriate to the subject**

Much of the evidence presented in support of an argument in a geography essay comes from the analysis of data. This involves the use of appropriate analytical techniques and the application of relevant tests of significance. Among the valid techniques characteristic of geographical inquiry are the use of interaction and gravity models, network analysis, correlation techniques, measures of dispersion, sampling techniques and standard error calculations. Where the data is qualitative, appropriate analytical techniques should be employed. The element of personal evaluation is important when interpreting the results of data analysis. The investigation should show some awareness of the authenticity, validity, and limitations of the data and the methods used.

Where data has not been used, the essay must still incorporate a critical analysis and evaluation of the information.

It may be that the results of the analysis are unexpected or do not seem to fit established patterns. Students should not be discouraged by this. Some of the best essays have emerged when students have had to reconsider and re-evaluate their original ideas, and modify their argument accordingly. Such an awareness of the need to make constant adjustments and corrections, and to recognize shortcomings, is an essential element of research.

### **Criterion G: use of language appropriate to the subject**

Geographical terminology and vocabulary must be used accurately and appropriately throughout the essay. It is important to adopt an objective style that avoids lengthy personal statements and opinions, and that communicates geographical information and ideas in a clear and precise manner.

### **Criterion H: conclusion**

The conclusion should synthesize the findings of the investigation and briefly reiterate the evidence relevant to the research question. The essay should state, where relevant, which hypotheses have been accepted or rejected and why. Hypotheses that have been rejected may be modified or replaced, suggesting new avenues of investigation.

The conclusion should critically evaluate the appropriateness of the methodology and acknowledge any flaws or limitations in the investigative process. Any unresolved questions that have arisen from the research should be introduced at this stage.

The conclusion should not be an emotive personal statement relating to an issue, conflict or problem, nor should it introduce new information that has not been discussed in the argument.

### **Criterion I: formal presentation**

This criterion relates to the extent to which the essay conforms to academic standards about the way in which research papers should be presented. The presentation of essays that omit a bibliography or that do not give references for quotations is deemed unacceptable (level 0). Essays that omit one of the required elements—title page, table of contents, page numbers—are deemed no better than satisfactory (maximum level 2), while essays that omit two of them are deemed poor at best (maximum level 1).

All illustrative material referred to in the body of the essay (maps, photographs, field sketches, charts and so on) should be located at relevant points, not collected at the end of the essay or in appendices. It should be well set out, and used to enhance the written text and clarify explanations.

Large data tables, large published maps referred to in the text, transcripts of interviews or an extensive series of calculations should be placed in the appendices. Field notes need not be included as an appendix, although it is a good idea to include one completed form in the case of questionnaires.

Where possible, the title, map reference number, date and publisher should be given for all maps consulted; and the source of all data, diagrams, graphs, charts, tables and photographs must be given.

### **Criterion J: abstract**

The abstract should clearly state the research question; give a brief account of how the investigation was carried out, the methods that were used and the types of information that were gathered; and summarize the findings as stated in the conclusion.

### **Criterion K: holistic judgment**

Qualities that are rewarded under this criterion include the following.

- Intellectual initiative: Ways of demonstrating this in geography essays include formulating a challenging research question, employing innovative or inventive methods of data collection and data analysis, and producing a work of originality.
- Depth of understanding and insight: These are most likely to be demonstrated through the ability of the student to:
  - grasp the theoretical background to the topic and keep it central to the investigation
  - use reflection in the development of the argument and critical evaluation of the essay
  - select and use imaginative illustrative techniques
  - overcome problems that arise
  - modify ideas in light of new evidence.

## History

These subject guidelines should be read in conjunction with the “Introduction”, “Outline” and “Details—all essays” sections of this guide.

### **Overview**

An extended essay in history (including Islamic history) provides students with an opportunity to undertake in-depth research in an area of history of genuine interest to them. The outcome of the research should be a coherent and structured essay that effectively addresses a particular issue expressed as a research question, or, if this is unsuitable, a hypothesis. Students writing their extended essay in history are strongly advised to use a research question.

### **Choice of topic**

The topic chosen must focus on the human past, be worthy of study, and lend itself to systematic investigation in line with the published assessment criteria. Essays that focus on events of the last 10 years are not acceptable, as these are regarded as current affairs, not history.

It is not a requirement for the topic to be chosen from the Diploma Programme history course, but it must be acceptable to the supervisor. It should provide an opportunity for critical analysis of source material, and not depend on summarizing general secondary sources (such as textbooks and encyclopedias), as this approach is likely to lead to an essay that is essentially narrative or descriptive. The topic chosen must be suitable for effective

treatment within the 4,000-word limit, so those that cover many aspects of history, and/or a long time period, are unlikely to produce successful essays. Narrowing the scope of the essay will help to ensure a clear focus, and will also allow students to demonstrate detailed and specific historical knowledge, understanding and critical analysis.

The following examples of titles for history extended essays are intended as guidance only. The pairings illustrate that focused topics (indicated by the first title) should be encouraged rather than broad topics (indicated by the second title). Note that it is not necessary to have a separate title for an extended essay in history, as the research question or hypothesis can be used on the cover as well as in the abstract and essay. It is usually better if this is the case, because it avoids confusion and helps the student to obtain a clear focus. However, most students start by thinking in terms of a wider topic and the following “Treatment of the topic” section gives guidance on defining and narrowing it.

- “Causes of the collapse of the Mayan civilization” **is better than** “The Mayan civilization”.
- “Varying interpretations of the Salem witch trials” **is better than** “Witch trials in North America”.
- “Use of the visual arts in fascist propaganda” **is better than** “Fascist propaganda”.
- “Stalin’s use of the party machine and terror” **is better than** “The Soviet Union under Stalin”.
- “The role of the Pan-African movement in the downfall of Kwame Nkrumah in 1966” **is better than** “Kwame Nkrumah”.

### Treatment of the topic

It is important that the topic, as stated in the research question, is appropriate for a history extended essay. Where topics could be approached from different viewpoints, such as economics or geography, the treatment of material must meet the subject requirements of history.

Students must choose a research question that is not of a trivial nature. Research questions that do not lead to systematic investigation, critical analysis and detailed understanding are unlikely to be suitable. Social history does include areas such as music and sport, but these are only acceptable for a history extended essay if they are tackled from a historical perspective. Adequate available sources are essential. If it is clear at an early stage in the research that they are not, a change of topic or focus should be made.

Research requires the use of sources. Ideally, primary sources will be included but an essay that uses only secondary sources will not be disqualified. Many different approaches to the research question can be appropriate, for instance:

- using primary and secondary sources in order to establish and appraise varying interpretations
- analysing sources in order to explain changing views over time of particular happenings or developments
- using source material for a case study or local history project, perhaps leading to a comparison of local and national developments
- collecting and analysing oral and written data from family and other contacts to help explain past happenings, perhaps leading to a comparison of local and national developments
- using all available sources to answer the question posed.

Some examples of titles, research questions and approaches chosen in the past include the following.

|                   |  |
|-------------------|--|
| <b>Title</b>      | <b>Varying interpretations of the Salem witch trials</b> |
| Research question | Which theory best explains the Salem witch trials?       |

|                   |   |
|-------------------|---|
| Approach          | Background reading is undertaken to enable identification and explanation of two dominant theories as to why the trials took place. The merits of the two theories are appraised using data obtained about the accused and the accusers.                        |
| <b>Title</b>      | <b>The influence of National Socialist ideology on the German school system in the late 1930s: a case study</b>   |
| Research question | To what extent were Hitler's educational aims fulfilled in the Uhland Gymnasium, 1937–1939?   |
| Approach          | Reading is undertaken to enable a summarization of National Socialist ideology and curriculum proposals. Primary sources (teachers' records) are used to establish how far the proposed changes were put into practice in one school during 1937–1939.          |
| <b>Title</b>      | <b>Changing views of the 1962 Cuban missile crisis</b>  |
| Research question | How and why have explanations of the Cuban missile crisis changed since 1962?   |
| Approach          | General reading is undertaken for a historical introduction and note taking. The views of a number of historians are summarized in order to understand, categorize and evaluate selected explanations of the 1962 missile crisis in the 1960s, 1970s and 1980s. |

The value and reliability of sources should not be accepted uncritically in history extended essays, especially when the authenticity of some of the sources is questionable. Students can show awareness of the value and limitations of the main sources used in their investigation through analysing their origin and purpose. (Who were the authors? What were their intentions? Is it likely that any of the sources have been altered?) Relevant outcomes of this analysis should be integrated into the student's argument (or at least considered in footnotes).

Students should aim to produce an argument that consistently shows good historical understanding in setting the research question into context, and addressing it fully and effectively. The argument should also be well substantiated, based on relevant specific evidence produced with added analytical comments.

Good critical analysis and historical judgment can be demonstrated through a sound assessment of source material and differing explanations and interpretations. Opportunities for reporting and assessing differing interpretations will vary with the topic chosen; students will gain credit for explaining why a historian reached the interpretation, not just for stating it.

An extended essay in history is a formal essay that is marked according to the assessment criteria. An essay may appear to be satisfactory but it will not score well if the criteria are ignored.

## Interpreting the assessment criteria

### Criterion A: research question

The research question must be appropriate to the particular subject in which the essay is submitted. In history, this means that it must focus on the human past and not be of a trivial nature. The research question must be clearly and exactly focused, and stated in both the abstract and the introduction of the essay.

### Criterion B: introduction

The introduction should explain succinctly the significance and context of the topic, why it is worthy of investigation and, where appropriate, how the research question relates to existing knowledge. It should not be used for lengthy, irrelevant background material.

### **Criterion C: investigation**

The range of resources available will be influenced by various factors, but above all by the topic. Students should aim to make use of both primary and secondary sources but this may not always be possible. The data gathered should be the evidence found in the sources to establish the context and to support the argument and conclusion of the essay. Proper planning of an essay should involve integrating source material, both factual and historians' views, in light of the research question. The latter should be used to support the student's own argument and not as a substitute for it. A statement by a historian should be challenged where there is evidence to do so.

All material used from sources must be acknowledged in references. If students make use of internet-based sources, they should do so critically and circumspectly in full awareness of their potential unreliability.

### **Criterion D: knowledge and understanding of the topic studied**

The essay should have a solid foundation of specific relevant knowledge, whose meaning is understood by the student. This knowledge can then be analysed and, on the basis of this analysis, an argument can be formed and a conclusion to the research question reached.

### **Criterion E: reasoned argument**

Students should be aware of the need to give their essays the backbone of a developing argument. Personal views should not simply be stated but need to be supported by reasoned argument based on specific details, to persuade the reader of their validity. Straightforward descriptive or narrative accounts that lack analysis do not usually advance an argument and should be avoided.

### **Criterion F: application of analytical and evaluative skills appropriate to the subject**

Analysis is a very important historical skill. Students should analyse (that is, consider the meaning and importance of) the relevant factual evidence/data produced by their research, to argue a case and reach a conclusion. Sources used in the research process should be evaluated and their reliability assessed.

### **Criterion G: use of language appropriate to the subject**

Students writing extended essays in history need to take three factors into consideration for this criterion: the language must be clear and unambiguous, historical terminology should be used, and statements should be specific and precise, avoiding sweeping generalizations and unsupported assertions. This criterion is not meant to disadvantage students who are not writing in their first language—as long as the meaning is clear, the historical content will be rewarded.

### **Criterion H: conclusion**

The most important aspect of the conclusion of a history essay is that it must reflect the evidence and argument presented in the body of the essay. It should also answer the research question asked, and if the data and analysis failed to do so, the conclusion must state this as well as any other problems encountered.

### **Criterion I: formal presentation**

This criterion relates to the extent to which the essay conforms to academic standards about the way in which research papers should be presented. The presentation of essays that omit a bibliography or that do not give references for quotations is deemed unacceptable (level 0). Essays that omit one of the required elements—title page, table of contents, page numbers—are deemed no better than satisfactory (maximum level 2), while essays that omit two of them are deemed poor at best (maximum level 1).

Careful recording of the relevant details of all evidence significant to the research question is necessary so that complete references can be provided in the essay, including page numbers. Any accepted form of referencing can be used. Full details of the author, title of publication, publisher and date of publication must be provided in the bibliography, which should list all the sources used in the essay in alphabetical order (by author's family name). Tables and charts should appear in the body of the essay, as close as possible to their first reference. Any material

that is not original must be acknowledged. If an appendix is included, it should be cross-referenced with the essay, otherwise it has little value.

### **Criterion J: abstract**

The abstract must consist of three elements: the research question (or hypothesis), the scope of the essay (that is, what was investigated and how it was investigated) and the conclusion. An abstract is not a precis of the topic.

### **Criterion K: holistic judgment**

Qualities that are rewarded under this criterion include the following.

- Intellectual initiative: Ways of demonstrating this in history essays include the choice of topic and research question, locating and using sources that have been little used previously or generated for the study (for instance, transcripts of oral interviews), and new approaches to popular topics (possibly achieved through evaluation of varying historical explanations).
- Insight and depth of understanding: These are most likely to be demonstrated as a consequence of detailed research, reflection that is thorough and well informed, and reasoned argument that consistently and effectively addresses the research question.

## Human rights

These subject guidelines should be read in conjunction with the “Introduction”, “Outline” and “Details—all essays” sections of this guide.

### **Overview**

An extended essay in human rights provides students with an opportunity to undertake an in-depth study of a limited topic in this area of research. Students who are considering registering an extended essay in this subject (which is a school-based syllabus) are strongly advised to study carefully a copy of the syllabus, obtainable from IB Cardiff, before making a final decision. The syllabus gives a clear idea of the scope and content of the subject, and will help students to decide whether their choice of topic is appropriate. The outcome of the research should be a coherent and structured essay that effectively addresses a particular issue expressed as a research question, or, if this is unsuitable, a hypothesis.

### **Choice of topic**

Human rights considerations are relevant to almost any human activity, but particularly those involving the treatment of groups or individuals, use of resources and technologies, or access to services such as education. Human rights issues are often referred to in the media, especially in the context of war and conflict. The protection of human rights has also inspired the founding of several important organizations such as the Red Cross, the United Nations and Amnesty International.

There are many topics that are potentially suitable for a human rights extended essay. However, when choosing a topic, it is important for students to bear in mind that it must encourage analysis and evaluation rather than description and unsupported value judgments, and must allow critical evaluation of human rights issues and practices in light of relevant theories and arguments.

When choosing a topic, students must ensure that the various assessment criteria can be satisfied within the 4,000-word limit. Students are advised to avoid topics that are too broad in scope to permit an in-depth study within the prescribed word limit. A limited topic, thoroughly researched and with a clear focus, is preferable to a broad topic that can only be examined superficially.



Students may use journalistic or visual material, interviews or data from the internet, but their essays should not be based solely on such sources. An extended essay in this subject is expected to show that the student possesses a knowledge and understanding of human rights theories.

The following examples of titles for human rights extended essays are intended as guidance only. The pairings illustrate that focused topics (indicated by the first title) should be encouraged rather than broad topics (indicated by the second title).

- “The political rights of women in Saudi Arabia” **is better than** “Women’s rights”.
- “The cultural rights of Australian Aborigines” **is better than** “The cultural rights of indigenous peoples”.
- “The US intervention in Kosovo: a critical analysis of justifications for the use of force to protect human rights” **is better than** “The USA and Kosovo”.
- “The UN response to the genocide in Rwanda” **is better than** “The Rwandan genocide”.

### Treatment of the topic

The topic for a human rights extended essay should focus on a particular human rights issue or a practice of a particular agent, be it a government, individual or organization, linking this issue or practice to relevant theories of human rights. For example, the first topic in the following list (about the political rights of women in Saudi Arabia) could involve an exploration of the issue of cultural relativism *versus* the universality of human rights. Similarly, the third topic in the list could involve references to “just war” theories or arguments for and against the use of force in protecting rights.

Similar treatment should be applied to other topics. For example, a student studying the work of a local human rights organization or a local human rights issue should link this to relevant theories. An essay comparing US and Soviet rhetorical descriptions of a human rights issue during the Cold War, for example, should make explicit what ideas or theories of human rights these superpowers seemed to be promoting. Whatever the topic, the treatment must involve a consideration of relevant theoretical perspectives.

An effective treatment of a topic requires that issues, practices, and relevant theories and arguments are explained in a concise and analytical manner using appropriate terminology, and that the ideas are supported by well-chosen examples. The argument in the essay should be logical and students should aim to answer the research question or prove the hypothesis set out in the introduction. In addition, a good essay will demonstrate that the student has used sources of information critically, paying particular attention to biased language and reporting. Relevant illustrations, diagrams and statistical tables should also be used when appropriate.

The following are some examples of titles, research questions and approaches for human rights.

|                   |   |
|-------------------|---|
| <b>Title</b>      | <b>The political rights of women in Saudi Arabia</b>  |
| Research question | To what extent can the limited political rights of women in Saudi Arabia be justified?  |
| Approach          | Reading is undertaken to enable a description of the political rights of women in Saudi Arabia and arguments that support such limitations. The limited political rights are critically discussed in light of some human rights theories—for example, cultural relativism and universality of human rights. |
| <b>Title</b>      | <b>The US intervention in Kosovo: a critical analysis of justifications for the use of force to protect human rights</b>  |
| Research question | To what extent was the US use of force in Kosovo a justified humanitarian intervention?   |

|                   |  |
|-------------------|--|
| Approach          | Reading is undertaken to enable a summary of the debate that preceded the US intervention in Kosovo and the impact it had on Kosovo. The US intervention in light of the “just war” theory is discussed to assess to what extent the US actions were justified.  |
| <b>Title</b>      | <b>The UN response to the genocide in Rwanda</b>   |
| Research question | How could the UN intervention in the Rwandan genocide be justified?  |
| Approach          | Reading is undertaken to enable a summary of the UN debate regarding the intervention in Rwanda and the impact the intervention had on the country. There is an analysis of arguments for and against intervention, an identification of which human rights theories the arguments are based on and a discussion of whether the UN response was justified. |

Students should aim to produce an argument that shows a good understanding of relevant concepts, ideas, theories and contemporary human rights issues. They should demonstrate an awareness of cultural and religious contexts that may affect the interpretation of human rights issues.

An extended essay in human rights is a formal essay that is marked according to the assessment criteria. An essay may appear to be satisfactory but it will not score well if the criteria are ignored.

## Interpreting the assessment criteria

### Criterion A: research question

The research question must be appropriate to the particular subject in which the essay is submitted. In human rights, this means that it must focus on some contemporary human rights issue. The research question must be clearly and exactly focused, and stated in both the abstract and introduction of the essay.

### Criterion B: introduction

The introduction should explain succinctly the significance and context of the topic, why it is worthy of investigation, what the key concepts are and how the research question relates to existing knowledge. A good introduction also provides an outline of the essay and may contain a hypothesis. It should not contain irrelevant background material.

### Criterion C: investigation

The range of resources is influenced by various factors, but above all by the topic. Students should aim to use sources that present different theoretical approaches, as well as those that enable human rights issues to be understood from different cultural perspectives.

### Criterion D: knowledge and understanding of the topic studied

Students should aim to demonstrate knowledge and understanding of human rights theories, issues and practices. Students should also demonstrate their awareness of cultural contexts and biases that often affect the ways that human rights theories, issues and practices are explained.

### Criterion E: reasoned argument

Students should aim to present their ideas in the form of a logical and coherent argument that is relevant to the research question. Ideas should be substantiated with factual evidence and examples. Straightforward descriptive or narrative accounts that lack analysis do not usually advance an argument and should be avoided.

### Criterion F: application of analytical and evaluative skills appropriate to the subject

Students should demonstrate their analytical skills by identifying premises, assumptions, and possible hidden agendas and biases linked to human rights theories and practices. They should be able to deconstruct arguments

related to these theories and practices, and evaluate to what extent agents who claim to support particular principles are applying them in practice. Because human rights issues are often contested and it is not uncommon for biased views to be presented, students should pay special attention to the evaluation of sources. They should avoid unjustified and subjective value judgments regarding human rights issues, but be able to evaluate how theories and practices link to concepts of justice and equality.

**Criterion G: use of language appropriate to the subject**

The language used should be clear, unambiguous and precise. Terminology specific to human rights should be used wherever possible to communicate ideas efficiently. Sweeping generalizations, unsupported assertions, overly subjective value judgment and biased language should all be avoided. This criterion is not meant to disadvantage students who are not writing in their first language—as long as the meaning is clear, the subject content will be rewarded.

**Criterion H: conclusion**

The conclusion of a human rights extended essay should reflect the evidence and argument presented in the body of the essay. It should also, if possible, provide a direct answer to the research question or address the hypothesis. If the research did not support the original hypothesis, this should be pointed out in the conclusion. The conclusion should also, where appropriate, comment on the limits of the validity of the conclusion, given the scope of research.

**Criterion I: formal presentation**

This criterion relates to the extent to which the essay conforms to academic standards about the way in which research papers should be presented. The presentation of essays that omit a bibliography or that do not give references for quotations is deemed unacceptable (level 0). Essays that omit one of the required elements—title page, table of contents, page numbers—are deemed no better than satisfactory (maximum level 2), while essays that omit two of them are deemed poor at best (maximum level 1).

**Criterion J: abstract**

The abstract must consist of three elements: the research question (or hypothesis), the scope of the essay (that is, what was investigated and how it was investigated) and the conclusion. An abstract is not a precis of the topic.

**Criterion K: holistic judgment**

Qualities that are rewarded under this criterion include the following.

- Intellectual initiative: Ways of demonstrating this in human rights essays include producing new knowledge based on original research (such as interviews), interpreting data from a human rights perspective or interpreting human rights theories, issues and practices in an original way.
- Insight and depth of understanding: These can be demonstrated by producing original, well-justified and substantiated arguments that directly address the research question.

## Information technology in a global society

These subject guidelines should be read in conjunction with the “Introduction”, “Outline” and “Details—all essays” sections of this guide.

### Overview

Information technology in a global society (ITGS) is concerned with how information technology (IT) systems affect people. All IT systems do affect people—this is why they were devised in the first place. Most IT systems are designed to bring some economic or quality-of-life benefit to people. Most also affect the way that people work. It is also true that IT systems can have deleterious effects on people’s lives—usually, but not always, unintentionally

produced. An ITGS extended essay should examine how an IT system or systems has affected people in positive and/or negative ways, with particular reference to the underlying technology.

An extended essay in ITGS offers an opportunity to undertake research into an IT-related topic in an area of personal interest to the student. It gives students a framework to develop research skills, to develop their technical understanding of IT, and to relate an IT system in the real world to its effects on individuals, organizations and society in general.

## Choice of topic

The choice of topic may result from a news story, issues brought up in class discussion or a personal interest. The topic must be firmly focused on an issue that has IT at its core. A topic that concentrates on another discipline but which has an IT angle is not suitable for the development of an ITGS extended essay.

Students writing an ITGS extended essay must be capable of demonstrating an in-depth knowledge of some aspect of IT. It is expected that IT terminology is used accurately in order to describe the system or systems under investigation, and that a level of expertise is shown that goes well beyond general knowledge.

IT provides a rich field for the choice of an extended essay because of its extremely rapid development. We are living through an information revolution that is so far-reaching that unprecedented moral and ethical issues are emerging. This gives the ITGS extended essay student much opportunity to be original and innovative in approach—qualities that can enhance and enrich an extended essay in ways that few other subject areas can match.

Much of the evidence quoted will inevitably be obtained from internet sources, but essays should also include other sources, such as books, newspapers and magazines, as well as primary evidence collected by the student. Students should be aware of the pitfalls in relying on unsubstantiated material, from whatever source, when undertaking their research. The essay should, therefore, include some critical analysis of the evidence.

In choosing their topic, students are strongly advised to concentrate on developing a research question, carrying out relevant research, and applying IT theory, tools and techniques. It is important that the research question is sufficiently focused to allow adequate treatment within the word limit. Topics that depend entirely on summarizing general secondary data should be avoided, as they are likely to lead to an essay that is essentially narrative or descriptive in nature. However, the effective use of relevant secondary data to support primary data in answering the research question will be fully rewarded by the examiner.

Students are encouraged to research a current issue. A successful essay will concentrate on one issue, but the issue should be significant enough to provide a wide variety of suitable evidence.

The following examples of titles for ITGS extended essays are intended as guidance only. The pairings illustrate that focused topics (indicated by the first title) should be encouraged rather than broad topics (indicated by the second title).

- “An investigation into the ways in which IT can assist patients with motor-nerve damage” **is better than** “IT and physical disabilities”.
- “Flight simulators as a means of training pilots to deal with wake turbulence” **is better than** “Virtual reality systems”.
- “Measures that can be taken to protect the transmission of banking information” **is better than** “Hacking”.
- “How the layering of network protocols has contributed to the rapid development of music downloads” **is better than** “Music and the internet”.
- “Issues in developing natural language interfaces” **is better than** “The uses of robots”.

- “How Open Source software has led to improved corporate networking” **is better than** “Modern operating systems”.

It is essential that the topic has an IT system or IT systems at its core. This means that the system(s) concerned must involve some form of data processing. Essays that focus on technology such as engineering, or on a science topic, are not suitable for ITGS essays. Similarly, an essay that has a social problem as its focus with only tenuous relevance to IT is unlikely to have sufficient depth.

### Treatment of the topic

Although an ITGS extended essay is not intended to be an exercise in demonstrating IT skills, it must clearly demonstrate in-depth technical understanding of the chosen area. Students who do not have well-developed IT practical skills are unlikely to show the level of insight that is required for the highest levels of attainment.

Although an ITGS essay should clearly demonstrate technical expertise, the inclusion of program code, markup codes (for example, HTML) or detailed electronics should only ever be supportive and not the main focus of the essay.

It may help if the student defines the topic chosen for study in the form of a research question, followed by a statement of intent that indicates which broad process is going to be used in answering the question. In this way, the approach to the topic chosen may be even further clarified. Some examples of this could be the following.

|                   |  |
|-------------------|--|
| <b>Topic</b>      | <b>The future of natural language interfaces</b>   |
| Research question | To what extent is it likely that natural language interfaces will replace the keyboard in the production of office documents?  |
| Approach          | Primary data is collected through interviews with university lecturers and researchers working in the field of natural language interfaces (qualitative research). The algorithms used, difficulties faced and progress to date are discussed. Questionnaires are emailed to office managers to determine to what extent there is a need for natural language data input and whether this could improve productivity. Public domain examples of natural language software are downloaded and its effectiveness assessed. Secondary research is collected by accessing internet-based reports from universities working in the field. |
| <b>Topic</b>      | <b>The effectiveness of e-learning as an enhancement to conventional teaching</b>  |
| Research question | Does the addition of e-learning systems improve the performance of students in mathematics?  |
| Approach          | An internet survey of e-learning systems, highlighting methodologies used by different systems. Quantitative comparisons are made of examination results before and after its adoption from schools that have adopted e-learning methods. Teacher and student opinions are surveyed by issuing questionnaires to teachers who have adopted e-learning and those who have rejected it. Secondary research is carried out by surveying teacher discussion boards.  |
| <b>Topic</b>      | <b>The impact of Open Source software</b>  |
| Research question | Has the wide availability of Open Source software resulted in improved security for networks?  |
| Approach          | Primary research is carried out by means of circulating questionnaires to network managers. Network managers who make use of Open Source are interviewed. Questionnaires are emailed to website developers. A study is made of an example of an Open Source e-business system.   |

Secondary research is carried out by looking at recent articles in IT trade magazines and surveying “help” websites for network managers.

## Interpreting the assessment criteria

### **Criterion A: research question**

The research question must be clearly and concisely stated in the introduction and the abstract. It can be defined in the form of a question or as a statement or a proposition for discussion. The IT system chosen as the focus of the essay should be sufficiently limited so that specific results of research can be demonstrated and linked to the social consequences. It is important to avoid vague generalizations and sweeping statements.

### **Criterion B: introduction**

This should explain, succinctly, the context of the research question, the significance of the topic and why it is worthy of investigation, and provide an overview of the impact of the issue. While it is important in the introduction to consider the theoretical context for the essay, it is not the place for a full review or explanation of that theory.

### **Criterion C: investigation**

There must be clear evidence of a well-planned investigation. Students are expected to use a wide range of both primary and secondary sources. Wherever possible, the secondary research can be followed by and further supported by primary research. Primary research can include carefully considered interviews, surveys and investigations. All of these techniques must be concisely explained and critically assessed in the essay, along with the analysis of the results.

The precise details from the data collection must be included in the appendices according to accepted standards for recording data using these techniques.

### **Criterion D: knowledge and understanding of the topic studied**

The essay must demonstrate a substantial and secure understanding of the IT issues being investigated. To this end, the level of IT knowledge must be clearly greater than general knowledge and show some professional insight and specialized study. The essay must not be a sociological study with some simple IT references—it should ideally address an IT-aware audience, not the general public.

### **Criterion E: reasoned argument**

The argument should always relate to the research question and the evidence provided. The essay should show a logical development of the argument throughout, providing a clear sense of direction.

### **Criterion F: application of analytical and evaluative skills appropriate to the subject**

Sufficient data should be collected so that there is scope for it to be summarized and presented in new ways to support the arguments being developed in the essay. Graphs and tables may be considered as methods for presenting some of the analysis. Materials collected in the research for the essay should be used selectively to make the desired points. Effective analysis occurs if the information provided is used to create a sound, reasoned and logical argument.

Effective evaluation occurs if the possible social and ethical impacts of the IT developments are considered, where possible, from both local and global perspectives. Students should also show critical awareness of the validity of their information and the possible limitations of their argument. Very importantly, the essay should clearly note any assumptions that the student has made in setting out the argument and reaching the conclusions.

### **Criterion G: use of language appropriate to the subject**

Extensive and accurate usage of IT terminology should feature throughout the essay. It may be appropriate for students to include limited amounts of program, HTML or other code to illustrate an argument, or it may be helpful for them to quote various system specifications or configurations.

A lack of IT terminology would suggest that the original topic is not suitable for an extended essay in ITGS.

Definitions should be clear and precise.

### **Criterion H: conclusion**

The conclusion must develop from the argument and be consistent with it. New or extraneous content must not be introduced at this point. Material from the introduction should not be reintroduced or repeated here, but there should be a new synthesis in light of the discussion. Any unresolved questions/issues should be included in the conclusion.

### **Criterion I: formal presentation**

This criterion refers to the extent to which the essay conforms to academic standards about the way in which research papers should be presented. The presentation of essays that omit a bibliography or that do not give references for quotations is deemed unacceptable (level 0). Essays that omit one of the required elements—title page, table of contents, page numbers—are deemed no better than satisfactory (maximum level 2), while essays that omit two of them are deemed poor at best (maximum level 1).

Any material included in the essay that is based on secondary sources should be referenced in the body of the essay. A full bibliography must also be provided. Extracts of interviews, correspondence and copies of relevant emails should be provided in an appendix.

### **Criterion J: abstract**

The abstract is judged on the clarity with which it states the research question, explains how the investigation was carried out and summarizes the conclusion. However, the quality of the research question or the conclusion is not judged in this criterion.

### **Criterion K: holistic judgment**

Qualities that are rewarded under this criterion include the following.

- **Intellectual initiative:** Ways of demonstrating this in ITGS essays include a choice of topic that shows originality or a new viewpoint on a well-known issue. Some IT issues are well known and regularly debated. Better essays may identify an issue that has not previously been extensively debated in the public domain.
- **Insight and depth of understanding:** An ITGS essay should show signs of in-depth IT knowledge. Linkage of the technology to the effects on people should be clear and convincing rather than speculative.
- **Creativity:** A good ITGS essay should deal with an issue of some contention. The suggestion of creative and technically feasible solutions to problems can demonstrate a higher level of achievement in this criterion.

## Literature and performance

These subject guidelines should be read in conjunction with the “Introduction”, “Outline” and “Details—all essays” sections of this guide.

## Overview

An extended essay in literature and performance provides students with the opportunity to undertake independent research into a topic of their choice that considers the relationship between literature and different kinds of performance. The research question should focus on the relationship between the text and the performance and should look at this relationship from a number of different viewpoints that could include research into the original text, its genre, the themes it treats, its structure, the cultural and socio/historical context of which it is part. It may also consider performance and production elements in the performance piece together with the theories of performance that may support them. The research focus must be on the transformation between genres since it is through that process that the subject declares itself. The definition of “genres” in this context is quite open-ended and may include film, opera, dance, music and certain forms of visual art as well as theatre.

## Choice of topic

The nature of the subject needs to be taken into account in the choice of topic. Literature and performance focuses upon the possible relationships that occur between a written text and its performance; this is the fundamental relationship any topic chosen must focus upon. It should not deal exclusively with either the text or the performance but look to provide a balanced consideration of both. A topic should be chosen that allows the student to demonstrate an understanding of how both literature and performance function in a creative and critical relationship with one another.

Students may explore any of the performing arts in their transformative exploration but must be careful not to unbalance the essay by allowing research into either the text or the performing art to dominate. If the research question lends itself to this approach it should be registered under Language A or the relevant subject in Group 6 and not under literature and performance.

While it is possible that there may be a creative element to the research task, care must be taken that the essay does not simply become a creative exercise. While blueprints for production or performance elements may be included, it is expected that they be validated by analysis and/or research.

A crucial feature of any topic is that it should be open to analytical argument and that the extended essay is supported by an adequate research base for the validation of any argument it proposes. Given the creative nature of theatre and the role creativity may inevitably play in a transformative exercise from one genre to another, a reasoned argument needs to be the fundamental structural basis for an extended essay in literature and performance.

Since works of literature, either poetic or narrative, will emerge from an historical background, from a culture, and from a socio-economic context, these areas can be important foci for research, just as more formal elements, particular to the genre, may be objects for analysis. The personal analysis of the student should be complemented, where appropriate, by established critical commentary. Wider research into history, society and culture might be appropriate depending on the topic chosen. The importance of theory to both literature and performance should also be taken into account by the student in the research undertaken for the essay. Given that there is a creative dimension to work in this subject the student should be aware that aesthetic choices need to be validated by research and analysis.

## Treatment of the topic

The essay will probably involve the student in a transformative exercise that is both critical and creative. Much care should be taken that the research question is manageable and that the text for transformation is either short enough for a thorough and specific treatment, or if it has to be longer than this, that the transformative exercise should be representative rather than complete. A poem might be short enough to “completely” transform, whereas a novel is certainly not: in this case the student needs to use critical judgment in choosing a representative passage,



or passages, to transform in order to respond to the research question. The student should avoid narrative descriptions of creative processes and needs to be inventive both in research methodology and in choice of topic. The student also needs to explore the significance of what the process of transformation gives us.

Since theatre is a composite art constructed from many art forms, the student should be encouraged to include appropriate visual reference material if it is considered to be important for the thorough research of the chosen topic. Such material must, however, be directly supportive of, and relevant to, the analysis/argument. It should be neatly presented, properly acknowledged, and should appear in the body of the essay. The visual approach may be particularly appropriate in essays that focus on aspects of production like costume, stage design or lighting.

The research methodology is critical to the success of the essay and students need to reflect critically on the resources consulted. Of course, the primary source is the original text but this will often have accumulated a critical discourse and this may need to be negotiated by the student as will its historical, cultural or social “place” according to the focus of the research question.

In looking at performance the student should understand that it will be necessary to move through different critical registers as the literary text is transformed or analyzed in relation to the specialism. Theatre, for example, has a terminology that differentiates its functions from those of literature.

Absolute reliance on textbooks and websites is discouraged and no extended essay in literature and performance should be based exclusively on either. The purpose of the extended essay is to actively pursue new knowledge through a consideration of two different art forms and how they might combine to illuminate their respective meanings.

The following examples give some indication of the possible range of titles, research questions and approaches.

|                   |   |
|-------------------|---|
| <b>Title</b>      | <b>Uncovering ideology; a theatrical transformation of sections of <i>Native Son</i></b>  |
| Research question | What could a theatrical examination of the conflict between racism and ideology in <i>Native Son</i> by Richard Wright reveal about the nature of society in the Chicago of the Depression era?   |
| Approach          | This title requires the student to explore the content of the novel in the light of a conflict between racism and ideology. It will call for research into the background of the novel, Chicago in the thirties, an understanding of the racial situation and the activity of radical political parties (specifically the communists) in relation to it. The staging ideas (these need only be blueprints) might take performance theory from practitioners like Brecht, Piscator or Reinhardt, all of whom saw the making of theatre as a political act. The basic focus of the essay must be research based and it is essential that ideas for transformation are validated by and grounded in research. Marks would be awarded for the “examination” itself, comprising an equal analysis of the original text, research into theatrical/performance theory and creative transformation. |
| <b>Title</b>      | <b>An analysis of costume as a source for understanding the inner life of the character</b>   |
| Research question | What do the choices Emma Bovary makes from her wardrobe through the course of the novel <i>Madame Bovary</i> reveal to the reader about her inner life?   |
| Approach          | This question asks the student to see costume as a reflection of character, of a hidden life, (emotional, erotic and subliminal) that the third-person narrative will not make explicit but will suggest through the exercise of taste and discrimination. The student can analyze the cut of a costume, its relationship to the figure of the protagonist, the subtleties of fabrics and materials and how the costume is perceived by other characters (often male suitors). The costume becomes a dramatic visual image in the novel and in the mind of the reader. The purpose of the essay is to uncover the intentions Flaubert had in this process. Once again, the student is asked to produce  |

|                   |   |
|-------------------|---|
|                   | <p>blueprints and designs but also to look behind the text for a socio/cultural background which might embrace fashion, taste, class and politics.</p> <p>The research methodology will include visual sources, paintings of the period and exploration of fabrics. The interpretative aspects of the essay are clear in the process of gleaning information from what is a subtle narrative style. Such a study could of course be applied to many other authors such as Marcel Proust or Edith Wharton.</p>   |
| <b>Title</b>      | <b>A study of how ambience might be transformed from description in fiction to the stage through the use of production elements</b>   |
| Research question | How could a dramatization of sections from John le Carre's novel <i>The Spy who Came in from the Cold</i> convey the mood and atmosphere of Cold War Europe?  |
| Approach          | The student could just as easily substitute a writer like Graham Greene. The key point to stress about this title is the importance of ensuring that the focus for the researcher is placed on the <b>act of transformation</b> from one form to another. Staging and lighting will come into play here and the film of the novel is an obvious resource as is "noir" in general, through photography and journalistic images. The student needs to understand how the culture and politics of particular eras create their own <b>look</b> or <b>aesthetic</b> . The exploration of this through projected scenarios and staging ideas would involve a strong creative element that would require support from careful historical and cultural research apart from what the novel itself provides. |
| <b>Title</b>      | <b>A study of characterization in Don Quixote</b>   |
| Research question | How has the character of Don Quixote (from the book of that name by Cervantes) been portrayed in theatre, opera and film?   |
| Approach          | This is a more straightforward research question that asks the student to look at performances developed from the work. It becomes more specific if you just focus on one art form, for example opera, and again the more specific the question, the greater chance the student has to develop some focused and valuable research. Performance analysis is fundamental to this question and the student needs to select key passages for scrutiny given the length of the work. The scrutiny of a libretto of one of the famous passages and a comparison of this with the text might be an interesting approach. Here the student is exploring a transformation as a critic rather than producing one.   |
| <b>Title</b>      | <b>Playing with the devil</b>   |
| Research question | How does the novella <i>The Turn of the Screw</i> by Henry James compare with the opera composed by Benjamin Britten as an exercise in the gothic style?  |
| Approach          | This will involve the student in performance analysis and will inevitably encourage some research into the conventions, gothic or otherwise, attending on the ghost story. As in many of these essays that involve the consideration of a whole text, the student needs to be selective in what is chosen for detailed scrutiny, though the brevity of this text offsets this problem a little. The risk of an essay like this simply becoming an exercise in reviewing the productions of the work must be avoided and this requires careful apportioning of specific focus. The student will naturally be drawn to a consideration of ambience, descriptive passages in the text and settings for the opera.  |
| <b>Title</b>      | <b>A study in how a choregraphical score might be transformed into a staging concept for a Shakespearian play</b>   |

|                   |  |
|-------------------|--|
| Research question | How does Jerome Robbins' choreography for Bernstein and Sondheim's <i>West Side Story</i> provoke us into a re-examination of Shakespeare's <i>Romeo and Juliet</i> ?  |
| Approach          | This is a reverse perspective attempting to explore the way in which a classic movement score may influence an understanding of a Shakespeare play. It asks us to explore the play (text) in terms of dance and decide how movement proposals from Jerome Robbins can actually engender a fresh understanding of the text. It will involve the student in a consideration of dance theatre, which is a hybrid that has attracted much contemporary interest through the work of ensembles like DV8 and Complicité or the work of practitioners like Pina Bausch. |

## Interpreting the assessment criteria

### Criterion A: research question

The research question must be focused, dealing with a transformation between literature and performance. The student may take the literary text as the starting point for research or, alternatively, take the reverse approach, which might begin with performance and engage with a re-interpretation of the literary text on the basis of performance analysis. The question may be presented either in the form of a question or as a statement or proposition for discussion. It must be specific and needs to centre on the relationship between the literary text and the chosen performance piece.

Finally, the question needs to be specific and manageable within the word count. Given the nature of the subject the student will be obliged to work in more than one register and must be prepared to be selective in the treatment of the topic chosen.

### Criterion B: introduction

It is important to place the research question in an appropriate historical, socio-cultural and literary context. A clear indication should be given as to why the particular topic was chosen and how it will be approached. The introduction should be clear and concise, detailing the topic and research methodology to be used in their investigations and analyses.

### Criterion C: investigation

The investigation will focus firstly on the text or the performance being studied depending on the order chosen. The primary literary text is central to the essay since this is what is transformed. The analysis of the text is fundamental to the process as is the exploration of a theoretical and critical background to it. The research question will dictate the extent to which secondary source material should be consulted but a comprehensive understanding of the literary text will presuppose a familiarity with its cultural and historical context and its style and genre.

The performance element will generate particular kinds of research according to the performing art selected. Part of the exciting potential of the essay in this subject is in the variety of research methodologies or pathways that the student may take depending on the research question. Visits to museums, art galleries, the cinema, the theatre, opera or ballet may all come to assume a preponderant importance in the research and the student may find that the adoption of many active research roles comes to define the experience.

As in any other essay the specifics of the research is crucial to the success of the exercise. Insight must not be simply the product of intuition, though this may play a part, but a clear line between analysis and research and the argument presented must be thoroughly established.

### Criterion D: knowledge and understanding of the topic studied

The student must demonstrate a contextual understanding of both the literary text and the performance piece. The student must also nurture a personal response to both. The research question will guide the student in the placing

of an emphasis on exactly what areas of the two foci need to be closely addressed. A question focusing on matters of style may be drawn to a close knowledge and understanding of genre, language and expression, while a question with a social theme may demand knowledge and understanding of historical background, political message or implicit ideologies. The subject of literature and performance is wide and this criterion will discover its focus from the specific research question.

**Criterion E: reasoned argument**

Students should be aware that their essays need to contain a developing argument that is carefully predicated on the nature of the relationship between the text and the performance that is being researched. The best essays will be those that present an argument supported by evidence that convinces the reader of the validity of their findings. The argument may originate in a personal view but should develop from this as the evidence generated by whatever transformation exercise is either attempted or analysed. The importance of balancing the text and the performance in the argument of which they form the two primary parts is crucial since, if one outweighs the other, the essay is in danger of becoming one or other of the subjects, not an inquiry into the relationship between them.

The student may find that data accumulates quickly as different research paths are followed. The ability to select data that is relevant to the argument the question has engendered will be a skill that distinguishes the students.

**Criterion F: application of analytical and evaluative skills appropriate to the subject**

The student should be able to analyse and evaluate the literary and performance work, whether this be a piece of narrative, a short story, a poem or, in the case of performance, a scene from a play, a piece of music or an image sequence in a film. The ability to analyze and evaluate the relationship between literature and performance is a fundamental skill that is required for research in this subject since what is being researched will invariably be researched **in relation to** either the literature or the performance.

The nature of the subject leaves plenty of space for hypothesis and experimentation and the student may well find that the original response to the question requires re-evaluation and modification. If the student is engaging in a task that may be partly creative, a necessary part of this process will be a critical review of practice, which may lead to different conclusions from those originally expected.

The generation of new knowledge is one of the most exciting aspects of the extended essay and students should welcome the possibility of sudden realizations that subvert the preconceived ideas they may have nurtured.

**Criterion G: use of language appropriate to the subject**

Literary terminology must be used accurately and appropriately and the terminology of the selected performing art must also be used in this way. The clarity of the writing is fundamental to any essay; in this case the student needs to be confident that they can move easily between different descriptive registers. The inclusion of visual images may also be a crucial part of the extended essay. These images should be annotated in a detailed and specific way as they need to have an illustrative rather than a merely decorative function.

**Criterion H: conclusion**

The conclusion must not introduce any new or extraneous material, nor should it merely repeat the content of the introduction. The conclusion should synthesize the findings of the investigation and may state where hypotheses have been accepted or rejected and why. The conclusion may also point to new possibilities for further investigation of unresolved questions that have arisen in the research.

**Criterion I: formal presentation**

This criterion judges the extent to which the essay conforms to academic standards in the way in which it is written. The presentation of essays that omit a bibliography or that do not give accurate and specific references for quotations is deemed unacceptable (level 0). Essays that omit one of the following required elements: title page, table of contents, page numbers, are deemed no better than satisfactory (maximum level 2), while essays that omit two of them are deemed poor (maximum level 1).

The essay must include a bibliography and any diagrams, plans, photographs, pictures or sketches should be attributed and suitably annotated.

**Criterion J: abstract**

The abstract should clearly state the research question; give a brief account of the scope and investigation, how it was carried out and the research methodology/methodologies that were used. The findings should be briefly summarized and the conclusion(s) stated.

**Criterion K: holistic judgment**

This criterion refers to the quality of the student's response to the research question or the chosen topic. It rewards intellectual initiative in the choice of research paths, the depth of understanding and perception demonstrated by the student in apprehending the nature of the relationship between the literature and the performance. The critical and creative skills of the student in relation to the challenge of the transformative exercise whether observed and analysed or practically applied are also rewarded.

## Mathematics

These subject guidelines should be read in conjunction with the "Introduction", "Outline" and "Details—all essays" sections of this guide.

### Overview

An extended essay in mathematics provides students with an opportunity to demonstrate an appreciation of any aspect of the subject, whether it is:

- the applicability of mathematics to solve both real and abstract problems
- the beauty of mathematics as in, for instance, geometry or fractal theory
- the elegance of mathematics in the proving of theorems as in, for example, number theory
- the origin and subsequent development of a branch of mathematics over a period of time, measured in tens, hundreds or thousands of years
- the links between different branches of mathematics and the powerful structures that enable many seemingly different problems to be solved by a single theory
- the way that a branch of mathematics has been born, or has flourished, as a result of technology.

These are just some of the many different ways that mathematics can be enjoyable or useful, or, as in many cases, both.

### Choice of topic

The extended essay may be written on any topic that has a mathematical focus and it need not be confined to the theory of mathematics itself.

Students may choose mathematical topics from fields such as engineering, the sciences or the social sciences, as well as from mathematics itself. Statistical analyses of experimental results taken from other subject areas are also acceptable, provided that they focus on the modelling process and discuss the limitations of the results; such essays should not include extensive non-mathematical detail. A topic selected from the history of mathematics may also be appropriate, provided that a clear line of mathematical development is demonstrated. Concentration on the lives of, or personal rivalries between, mathematicians would be irrelevant and would not score highly on the assessment criteria.

It should be noted that the assessment criteria give credit for the nature of the investigation and for the extent that reasoned arguments are applied to an appropriate research question. Students should avoid choosing a topic that gives rise to a trivial research question or one that is not sufficiently focused to allow appropriate treatment within a suitably sized essay. Students will normally be expected either to extend their knowledge beyond that encountered in the Diploma Programme mathematics course they are studying, or to apply techniques used in their mathematics course to modelling in an appropriately chosen topic. However, it is very important to remember that it is an essay that is being written, not a research paper for a journal of advanced mathematics, and no result, however impressive, should be quoted without evidence of the student's real understanding of it.

The following examples of titles for mathematics extended essays are intended as guidance only. The pairings illustrate that focused topics (indicated by the first title) should be encouraged rather than broad topics (indicated by the second title).

- “Prime numbers in cryptography” **is better than** “Prime numbers”.
- “The Hausdorff dimension of fractal sets” **is better than** “Fractals”.
- “Continued fractions in birth–death processes” **is better than** “Continued fractions”.
- “The proof of the law of quadratic reciprocity” **is better than** “CF Gauss: the mathematician”.
- “Using graph theory to minimize cost” **is better than** “Graph theory”.

The next examples illustrate ways in which mathematics topics can be refined and successfully approached as extended essays.

|                   |   |
|-------------------|---|
| <b>Topic</b>      | <b>The geometry of navigation</b>   |
| Research question | What was the role of mathematics, and geometry in particular, in navigation when we relied on the stars? Does it still play a part now we have man-made satellites?   |
| Approach          | Using one of the two geometric representations of the earth (spherical or ellipsoidal), describe how maps and charts were produced to assist navigators in the past.  |
| <b>Topic</b>      | <b>Square–triangular numbers and Pell’s equation</b>  |
| Research question | How many square numbers are also triangular numbers, where are they, and what other problems lead to Pell’s equation?   |
| Approach          | A description of square and triangular numbers, and how the locations of numbers that are both are solutions of Pell’s equation. Some other problems, perhaps in number theory and geometry, that lead to the equation could be described, with a brief history of the equation included. |
| <b>Topic</b>      | <b>The exponential function and the measurement of age and growth</b>   |
| Research question | How does the exponential function, and its calculus, inform areas of science such as nuclear physics, geology, anthropology or demography?  |
| Approach          | Use one of the settings where exponential growth applies, perhaps modelling the world’s population, to describe the phenomena. Show how it is applicable in mathematical models of other real situations.   |
| <b>Topic</b>      | <b>Approximation of irrational numbers by rational numbers</b>  |
| Research question | How well can $\pi$ , $e$ , $\sqrt{2}$ and other irrationals be approximated by rational numbers?  |

|                   |   |
|-------------------|---|
| Approach          | Use the decimal representation of irrational numbers as a starting point to introduce approximation by rationals. Show how a continued fraction expansion of an irrational can also provide rational approximation, and discuss error bounds and orders of approximation. |
| <b>Topic</b>      | <b>Archimedes' calculations of areas</b>  |
| Research question | What is the legacy of Archimedes' calculations of circular and parabolic areas in today's methods of integration?   |
| Approach          | Describe how Archimedes determined the area of a circle by using inscribed polygons, leading also to his measurement of $\pi$ . Continue with a description of his method of discovery for calculating the area of a parabola.  |

## Treatment of the topic

Whatever the title of the extended essay, students must apply good mathematical practice that is relevant to the chosen topic. Data must be analysed using appropriate techniques; arguments correctly reasoned; situations modelled using correct methodology; problems clearly stated and techniques at the correct level of sophistication applied to their solution. There must be sufficient explanation and commentary throughout the extended essay to ensure that the reader does not lose sight of the purpose of the essay in a mass of mathematical symbols, formulae and analysis.

The unique disciplines of mathematics must be respected throughout. Relevant graphs and diagrams are often important and should be incorporated in the body of the essay, not relegated to an appendix. However, lengthy printouts, tables of results and computer programs should not be allowed to interrupt the development of the essay, and should appear separately as footnotes or in an appendix. Proofs of key results may be included but proofs of standard results should be either omitted or, if they illustrate an important point, included in an appendix.

Frequent reference to the assessment criteria by both the supervisor and the student will help keep a sharper focus on the project.

## Interpreting the assessment criteria

### Criterion A: research question

Although the aim of the essay can best be defined in the form of a question, it may also be presented as a statement or proposition for discussion.

### Criterion B: introduction

The introduction should relate the research question to existing subject knowledge: the student's personal experience or particular opinion is rarely relevant here.

### Criterion C: investigation

The number of sources that require consultation will be dependent on the research question that the essay addresses. It must be sufficient, but not unnecessarily long, and the various items must, after being consulted, contribute to the essay in a meaningful way.

### Criterion D: knowledge and understanding of the topic studied

Clear evidence of understanding of the chosen content of the essay is more important than any attempt to exhibit an unnecessarily wide mathematical knowledge. The level of knowledge displayed should reflect the mathematics acquired in the classroom and any additional information that the research for the essay has provided.

### **Criterion E: reasoned argument**

In a mathematics extended essay, the terms “reasoning” and “argument” can apply to the essay overall and, with a somewhat different interpretation, to one or more sub-sections of the essay, such as in the proof of a theorem. The mark awarded should reflect both of these aspects.

### **Criterion F: application of analytical and evaluative skills appropriate to the subject**

The words “appropriate to the subject” are paramount here, given the breadth of mathematics today. Essays based on mathematical proof require skills in deductive reasoning and structuring; essays of an investigative nature, answering a research question or hypothesis, involve interpretative skills; while mathematical modelling requires an ability to formulate correctly a problem in mathematical terms.

### **Criterion G: use of language appropriate to the subject**

The purpose of language in mathematics is, as in other subjects, to communicate. In an extended essay, it should communicate clearly, not just to an examiner who is likely to be more mathematically sophisticated than the student, but also to an interested reader with a similar mathematical competence to the student. Mathematical “name-dropping” should be avoided.

### **Criterion H: conclusion**

“Consistent” is the key word here: the conclusion should develop out of the argument and not introduce new or extraneous matter. It should not repeat the material of the introduction; rather, it should present a new synthesis in light of the discussion.

### **Criterion I: formal presentation**

This criterion relates to the extent to which the essay conforms to academic standards about the way in which research papers should be presented. The presentation of essays that omit a bibliography or that do not give references for quotations is deemed unacceptable (level 0). Essays that omit one of the required elements—title page, table of contents, page numbers—are deemed no better than satisfactory (maximum level 2), while essays that omit two of them are deemed poor at best (maximum level 1).

Word count is rarely an important factor in a good mathematics extended essay. Since equations and formulae (indicating the student’s mathematical reasoning) are not included in the word count, a substantial essay can be produced that contains comparatively few words. Concise, elegant mathematics supported by graphs, diagrams and important proofs that do not interrupt the development of the essay are encouraged. However, an essay that is excessive in length will be penalized, especially if this is because of unnecessary content. There is no mandatory minimum length for an essay in mathematics, and credit will be given for organizing the content in an efficient readable style, rather than for a page or word count. Mastery of appropriate concepts, and an ability to present these in an effective way using mathematical means, should be the aim.

### **Criterion J: abstract**

The abstract is judged on the clarity with which it presents an overview of the research and the essay, not on the quality of the research question itself, nor on the quality of the argument or the conclusions.

### **Criterion K: holistic judgment**

Qualities that are rewarded under this criterion include intellectual initiative, insight and depth of understanding, and creativity. Such qualities can be displayed in different ways, depending on the type of mathematics extended essay.



# Music

These subject guidelines should be read in conjunction with the “Introduction”, “Outline” and “Details—all essays” sections of this guide.

## Overview

An extended essay in music provides students with an opportunity to undertake in-depth research into a topic of genuine interest to them. The student is encouraged to develop and explore, in a disciplined and imaginative way, a research question appropriate to the subject.

The outcome of the research should be a coherent and structured piece of writing that effectively addresses a particular issue or research question and arrives at a particular, and preferably personal, conclusion.

**Real music** should be at the heart of an extended essay in music. This means that particular pieces of music, experienced via recordings, live performances or concerts, should be chosen as the core focus of the extended essay. Students should strive for a coherent verbal analysis and interpretation of **one or more pieces of music** in relation to the chosen research question.

Absolute reliance on textbooks and the internet is discouraged and no extended essay in music should be based exclusively on such sources. Textbooks should be consulted only insofar as they may stimulate original ideas, provide models of disciplined, structured and informed approaches, and encourage direct and personal involvement with the essay topic.

## Choice of topic

The chosen topic may be inspired by one or several of the areas of interest listed here. (Please note, this is not an exhaustive list, but is intended for guidance only).

- Aspects of the Diploma Programme music course (for Diploma Programme music students)
- Local performances or concerts
- Musical cultures that students have encountered that are not their own
- Personal contact with composers and/or performers
- Direct involvement in actually making music
- Recordings
- Music on the internet, or downloaded from it
- Other music that has a particular interest, emotional appeal or other importance for the student

It is strongly recommended that students are encouraged to be as much involved as possible in activities such as those listed previously during the writing process, if they are relevant to the chosen topic. However, it is recognized that students who choose an extended essay in music may not be studying the Diploma Programme music course.

It is **essential** that the topic chosen is distinctively musical. It is quite acceptable, for example, for a student to explore a topical question relating to popular music, jazz or blues, but the primary focus of the essay must be more concerned with the music itself than with the lives of the performers, the nature of the instruments used or the lyrics. Supervisors should, therefore, strongly discourage students who are primarily interested in analysing text or lyrics, particularly of pop songs, from submitting extended essays in music.

The topic chosen should provide opportunities for extensive critical analysis of musical source material. Topics that are entirely dependent on summarizing general secondary sources (such as textbooks and encyclopedias), and

topics likely to lead to an essay that is essentially narrative or descriptive in nature, should be avoided. Restricting the scope of the essay will help to ensure a clear focus, and will also provide opportunities for demonstrating detailed musical understanding and critical analysis.

To achieve this goal, it is essential that the research question chosen can be effectively answered. Titles along the lines of “Clara Schumann”, for example, do not give much scope for effective analysis or argument—they are more likely to produce an account of her life and music. Topics such as “Computers and music” should be treated from both musical and critical perspectives, and should concentrate on musical, rather than technological, aspects. Redundant research questions such as the comparison of a play to an opera of the same title (which inevitably means that only half the essay is focused on music itself) should be avoided.

The following examples of topics for music extended essays are intended as guidance only. The pairings illustrate that focused topics (indicated by the first title) should be encouraged rather than broad topics (indicated by the second title).

- “The use of contrapuntal techniques in Bach's *Art of Fugue*” **is better than** “Bach's Fugues”.
- “Harmonic innovation in the bebop style of Dizzy Gillespie” **is better than** “The music of Dizzy Gillespie”.
- “The role of minimalist techniques in Balinese gamelan” **is better than** “Balinese gamelan”.
- “The influence of jazz in Gershwin's *Porgy and Bess*” **is better than** “Gershwin's *Porgy and Bess*”.

Moreover, it may help if the student further defines the topic chosen for study in the form of a research question, followed by a statement of intent that indicates which broad process is going to be used in answering the question. In this way, the approach to the topic chosen may be even further clarified. Some examples of this could be as follows.

|                   |  |
|-------------------|--|
| <b>Title</b>      | <b>Edgard Varèse and Frank Zappa</b>   |
| Research question | What is the influence of Edgard Varèse on the musical output of Frank Zappa?   |
| Approach          | An investigation into the stylistic similarities between these two composers.  |
| <b>Title</b>      | <b><i>Jesus Christ Superstar</i> and opera</b>   |
| Research question | Is <i>Jesus Christ Superstar</i> a modern classical opera?   |
| Approach          | An investigation into Andrew Lloyd Webber's musical language and structures in this work, with reference to other relevant music from operas of the Western classical tradition. |
| <b>Title</b>      | <b>The naming of Mozart's music</b>  |
| Research question | What evidence is there to support the title of Mozart's divertimento <i>Ein Musikalischer Spass (A Musical Joke)</i> K. 522 (1787)?  |
| Approach          | An investigation into Mozart's compositional techniques in this work.  |

However, it is important to bear in mind that, in the subject of music, a research “question” is sometimes not an accurate description of the task. Therefore, students should not force aesthetic or sociocultural issues into a question format when the articulation of a clear and probing inquiry into an idea is more appropriate. Examples of this could be as follows.

|              |   |
|--------------|---|
| <b>Title</b> | <b>Emotional tension in traditional music</b> |
|--------------|---|

|                   |  |
|-------------------|--|
| Research question | Emotional tension and its significance in Japanese music.  |
| Approach          | An investigation into the mechanisms used in traditional Japanese music to create emotional tension, with reference to comparable examples in Western music. |

Note that this approach is looking for a commonality of expressive device between two cultures, allowing for a probing inquiry through comparison. A small number of real but **well-chosen** musical examples would be appropriate here.

|                   |   |
|-------------------|---|
| <b>Title</b>      | <b>Musical continuity in Frederick Chopin's 24 piano Preludes Op. 28</b>  |
| Research question | An investigation into the presence and musical significance of a recurrent motif found throughout Frederick Chopin's 24 piano Preludes, Op. 28. |
| Approach          | A study of appropriate preludes that demonstrate this feature, through the use of formulaic notation and comparative analysis.                  |

Note that this approach, while still using comparative analysis, is more focused on the musical mechanics of a series of works by the same composer, allowing for an in-depth study within the word limit. In this case, the student would only be able to study five or six preludes, given the parameters of an extended essay.

|                   |   |
|-------------------|---|
| <b>Title</b>      | <b>The music of Hildegard of Bingen—an explanation of its appeal and justification of its popularity</b>  |
| Research question | An investigation into the reasons for the popularity of the music of Hildegard of Bingen today.   |
| Approach          | A study of Hildegard of Bingen's musical style in comparison with other sacred music from her time, through analysis and comparison of musical examples, with particular reference to the aesthetic theory of musical expectation and inhibition. |

This approach has its dangers, in the sense that it can be easy to make a supposition in a research question, without any evidence, and then try to prove the statement by subjective and superficial comment and analysis. However, at its best, this approach can allow investigation into other important areas of musical study and theory, while remaining focused on music itself.

### Treatment of the topic

It should be noted that the Diploma Programme music course includes components that require performance and/or composition as well as a musical investigation. An extended essay in music has a different purpose, in that the focus should be clearly on a verbal response to a research question.

In order to promote personal involvement in the extended essay, the use of primary sources that are locally available should be encouraged wherever possible. However, it is appreciated that, in certain situations, students may not necessarily have access to primary musical sources. In such situations, in order not to restrict the topics that can be investigated, recordings of a high quality are considered acceptable sources. It is important that the topic and research question reflect a firm emphasis on music, and that they do not become directed towards another subject area.

Appropriate resources for music include books, textbooks, the internet, scores, interviews, recordings, and live performances or concerts of the music being studied. The inclusion of appropriate reference material, such as music

notation, audio tapes or other musical examples, with music extended essays is encouraged as long as the material is directly supportive of, and relevant to, the argument/evaluation.

Students are expected to evaluate critically the resources consulted during the process of writing the essay by asking themselves the following questions.

- Which sources are vital to the support of my ideas, opinions and assertions?
- Which sources do not contribute to the analysis?

Students must choose a research question that is suitable for effective treatment within the word limit and is not of a trivial nature. Research questions that do not allow a systematic investigation that demonstrates critical musical analysis and detailed understanding are unlikely to be suitable. In some instances, it may become clear at an early stage in the research that too few sources are available to permit such an investigation. In such cases, a change of focus should be made.

Many different approaches to the research question can be appropriate, for instance:

- use of primary sources (music and musicians) and secondary sources (material **about** music) in order to establish and appraise varying interpretations
- analysing sources (primary and secondary) in order to explore and explain particular aspects of musical techniques
- using primary source material for an analysis, with emphasis on a particular aspect of the music
- collecting and analysing orally transmitted and/or written music from live musicians and/or composers through recordings, possibly leading to a comparison of similar or different music.

Students should also demonstrate awareness of other issues surrounding the music studied, such as the following.

- Do I show an awareness of the value and limitations of the music I am studying through analysing its origin and purpose?
- Do I show a consistently good musical understanding in setting the research question into context and addressing it fully and effectively?

Relevant outcomes of this analysis should be integrated into the student's argument.

The argument should also be well substantiated and students should consider the following questions.

- With what evidence do I support my comments and conclusions?
- Is this evidence relevant and well founded, and not based simply on my preconceptions?

Frequent reference to the assessment criteria by both the supervisor and the student will help keep a sharper focus on the project.

## Interpreting the assessment criteria

Please note: extended essays that do not focus on real music are likely to score 0 in criterion A, and are unlikely to score highly in criteria C, D, F and G.

### **Criterion A: research question**

The research question can often be best defined in the form of a question. It may, however, also be presented as a statement or proposition for discussion. It must be:

- specific and sharply focused
- appropriate to the particular area of music being explored
- centred on music and not on peripheral issues such as biography or social discourses
- stated clearly early on in the essay.

Note that larger-scale musical works or groups of pieces may limit the possibility of effective treatment within the word limit.

### **Criterion B: introduction**

The introduction should relate the research question to existing subject knowledge: the student's personal experience or particular opinion is rarely relevant here.

The introduction should not be seen as an opportunity for padding out an essay with a lengthy account of the context of the music.

### **Criterion C: investigation**

The range of resources available will be influenced by various factors, but above all by the topic.

- Students should use primary sources (scores, recordings, performances, interviews) in the first instance, with secondary sources (textbooks and the comments of other musicians) as evidential support.
- The proper planning of an essay should involve interrogating source material in light of the research question, so that the views of other musicians are used to support the student's own argument, and not as a substitute for that argument. It may thus be helpful for a student to challenge a statement by a musician, in reference to the music being studied, instead of simply agreeing with it, where there is evidence to support such a challenge.
- If students make use of internet-based sources, they should do so critically and circumspectly in full awareness of their potential unreliability.

### **Criterion D: knowledge and understanding of the topic studied**

Students are expected to demonstrate knowledge and understanding of the music chosen, together with its historical, social and cultural, as well as academic, contexts. Wherever possible, this knowledge should be based at least partially on primary sources.

### **Criterion E: reasoned argument**

Students should be aware of the need to give their essays the backbone of a developing argument. Personal views should not simply be stated but need to be supported by reasoned argument to persuade the reader of their validity. Straightforward descriptive or narrative accounts that lack analysis do not usually advance an argument and should be avoided.

### **Criterion F: application of analytical and evaluative skills appropriate to the subject**

Students should accurately and consistently analyse technical aspects of the music (melody, harmony, rhythm, texture, tone colour, and lyrics or text), demonstrating an understanding and a persuasive personal interpretation of the music.

### **Criterion G: use of language appropriate to the subject**

Students are expected to make effective use of musical terminology and, where appropriate, notation. Notation may take a variety of forms, depending on the type of music studied.

### **Criterion H: conclusion**

“Consistent” is the key word here: the conclusion should develop out of the argument and not introduce new or extraneous matter. It should not repeat the material of the introduction; rather, it should present a new synthesis in light of the discussion.

### **Criterion I: formal presentation**

This criterion relates to the extent to which the essay conforms to academic standards about the way in which research papers should be presented. The presentation of essays that omit a bibliography or that do not give references for quotations is deemed unacceptable (level 0). Essays that omit one of the required elements—title page, table of contents, page numbers—are deemed no better than satisfactory (maximum level 2), while essays that omit two of them are deemed poor at best (maximum level 1).

In music, discographies should be included where appropriate; musical examples, and tables and charts, if relevant, should appear in the body of the essay, as close as possible to their first reference.

### **Criterion J: abstract**

The abstract is judged on the clarity with which it presents an overview of the research and the essay, not on the quality of the research question itself, nor on the quality of the argument or the conclusions.

### **Criterion K: holistic judgment**

Qualities that are rewarded under this criterion include the following.

- Intellectual initiative: Ways of demonstrating this in music essays include the choice of topic and research question, locating and using a wide range of sources, including some that may have been little used previously or generated for the study (for instance, transcripts of oral interviews).
- Insight and depth of understanding: These are most likely to be demonstrated as a consequence of detailed research, reflection that is thorough and well informed, and reasoned argument that consistently and effectively addresses the research question.
- Creativity: In music essays, this includes qualities such as comparison of musical features, inventive approaches to musical analysis and new approaches to popular topics.

## Peace and conflict studies

These subject guidelines should be read in conjunction with the “Introduction”, “Outline” and “Details—all essays” sections of this guide.

### **Overview**

An extended essay in peace and conflict studies provides students with an opportunity to undertake an in-depth study of a limited topic in this field. Essays should allow students to develop and show research, interpretative and presentational skills.

Students who are considering registering an extended essay in this subject (which is a school-based syllabus) are strongly advised to study carefully a copy of the syllabus, obtainable from IB Cardiff, before making a final decision. The syllabus gives a clear idea of the scope and content of the subject, and will help students to decide whether their choice of topic is appropriate.

## Choice of topic

The choice of topic must ensure that the various assessment criteria can be satisfied. Students are advised to avoid topics that are too broad in scope to permit an in-depth study within the prescribed word limit. A limited topic, thoroughly researched and with a clear focus, is preferable to a broad topic that can only be examined superficially.

There are many areas of human interaction in which conflict and/or peace can be observed, but purely descriptive essays should be avoided. Topics drawn from more dynamic situations allow the process of change to be studied and the student to assess the viability of peace being achieved or maintained.

When choosing a topic, students should ensure that a variety of sources are available. Students may use journalistic or visual/pictorial material, or data collected from interviews, but their essays should not be based solely on such sources. In particular, students should realize that extended essays in this subject are expected to show knowledge and understanding of the different theories about the causes of peace and conflict (see assessment criterion D).

The following examples of peace and conflict studies extended essays are intended as guidance only. The pairings illustrate that focused topics (indicated by the first title) should be encouraged rather than broad topics (indicated by the second title).

- “The debate about the effects of television violence on pre-teenagers: social and legislative safeguards and their effectiveness” **is better than** “Violence on television”.
- “Maori non-violent struggles for their land” **is better than** “The political position of the Maori people”.
- “Racism in [X] and proposals for its reduction” **is better than** “A study of racism”.
- “Conscientious objection in Switzerland: a study of its history, the human rights issues, the effects acceptance would entail, and of its political support” **is better than** “The case for conscientious objection”.

## Treatment of the topic

Peace and conflict studies involves differing interpretations of situations, events, causes and solutions. The better essays will examine a wide variety of opinions, assess their strong and weak points, and include an element of personal evaluation.

Many essays will involve topics of which students have direct experience, to which they have easy access via family or friends, or with which they have some political, philosophical or cultural affinity. This is not discouraged but, in such cases, care must be exercised to maintain the academic standards of essay writing, particularly with reference to sources, contentious issues and conclusions. Several successful essays of this type have been written within the framework of a school or local community. In these cases, students have had no difficulty in finding ample source material, much of it being primary source material.

Peace and conflict studies is an interdisciplinary subject, and essays should reflect this. For example, data may be drawn from statistics, geography, sociology, psychology, history, economics, politics and journalism. Such data must be integrated, and shown to be relevant to the scope of the peace and conflict studies syllabus.

Essays in this subject must obviously show an awareness and understanding of the differing roles, views and activities of all parties to the conflict being researched, and must also suggest and critically examine possible solutions to the conflict (criterion F). In responding to this criterion, as well as to criteria D and G, students should use every opportunity to show their awareness of theories about the causes of peace and conflict.

The assessment criteria should be used as a guide to the organization and structure of the essay. In the early part of the essay, the chosen topic and research question should be shown to have a firm place in some aspect of the

broad peace and conflict studies syllabus. Placing the topic and research question in context should be done briefly but clearly (criterion B).

One of the weakest elements of extended essays in this subject is the failure of many students to show that they have any knowledge and understanding of theories about the causes of peace and conflict, which should underpin any study of the subject. At least one of the books that deal with these theories ought to appear in the bibliography and students should show their awareness of such theories at appropriate points in their essays (criterion D).

Some examples of titles, research questions and approaches used in the past include the following.

|                   |   |
|-------------------|---|
| <b>Title</b>      | <b>Violence in the American school system</b>   |
| Research question | An analysis of the causes of school violence and suggested solutions.   |
| Approach          | This is a good example of a topic of which the student had personal experience. General reading is undertaken to set the context. This is followed by interviews with fellow students and effective use of regulations of local education authorities and local press reports. A sound knowledge and understanding of theories about peace and conflict is applied in researching and organizing both parts of the essay. |
| <b>Title</b>      | <b>Conflict in Germany between German nationals and Turkish immigrants</b>  |
| Research question | An analysis of the causes of conflict between the two groups, and of possible solutions.  |
| Approach          | General reading of secondary sources/articles is undertaken to set the context. The argument about causes of violence is developed from interviews with German nationals and Turkish immigrants, by applying knowledge of theories about the causes of conflict, and by using examples of actual cases of conflict and tension. The essay concludes by suggesting possible ways of alleviating or removing conflict.      |
| <b>Title</b>      | <b>Has the Kashmir conflict become a permanent vendetta between India and Pakistan or is a peaceful solution possible?</b>  |
| Research question | The question is built into the title, but is also stated in the early part of the essay and in the abstract.  |
| Approach          | General reading of secondary sources is undertaken to write a historical summary of the conflict and its causes since independence, with comments drawn from knowledge of the theories about the causes of conflict. This is followed by a discussion of possible paths to a peaceful compromise with a cautiously optimistic conclusion.   |

## Interpreting the assessment criteria

### Criterion A: research question

Although the aim of the essay can best be defined in the form of a question, it may also be presented as a statement or proposition for discussion. It must be appropriate to the subject in which the essay is submitted. In peace and conflict studies, this provides students with a wide range of topics. Even if the research question is built into the title itself in the form of a question, it must also be clearly stated in the early part of the essay and in the abstract.



**Criterion B: introduction**

Students should explain briefly the importance and the context of the topic, and, perhaps, the reason for choosing it. The introduction should relate the research question to existing subject knowledge: the student's personal experience or particular opinion is rarely relevant here.

**Criterion C: investigation**

Students should demonstrate that they have selected a range of sources on the basis of their relevance to the topic and the research question. They should also show that the investigation into sources and data has been planned and carefully selected.

**Criterion D: knowledge and understanding of the topic studied**

Students are expected to illustrate their knowledge of the chosen topic by placing it within a context of peace and conflict in society. This knowledge should include an understanding of academic theories about the causes of peace and conflict.

**Criterion E: reasoned argument**

This, along with the previous criterion, goes to the heart of the essay. A reasoned argument will be logical, coherent, persuasive, well supported with evidence and always relevant to the research question.

**Criterion F: application of analytical and evaluative skills appropriate to the subject**

Students are expected to apply peace and conflict analysis accurately and consistently, to demonstrate awareness and understanding of the differing roles, interpretations and actions of all conflicting parties, as well as a realistic examination of possible solutions to conflict situations.

**Criterion G: use of language appropriate to the subject**

The use of language must be effective and include relevant peace and conflict terminology.

**Criterion H: conclusion**

This should stem from, and be consistent with, the evidence presented in the research. No new material should be introduced apart from identifying new questions that may have arisen from the research.

**Criterion I: formal presentation**

This criterion relates to the extent to which the essay conforms to academic standards about the way in which research papers should be presented. The presentation of essays that omit a bibliography or that do not give references for quotations is deemed unacceptable (level 0). Essays that omit one of the required elements—title page, table of contents, page numbers—are deemed no better than satisfactory (maximum level 2), while essays that omit two of them are deemed poor at best (maximum level 1).

Appendices are not essential and examiners are not required to read them. It is important, therefore, for students to include all content of direct relevance to the argument in the body of the essay.

**Criterion J: abstract**

The abstract is judged on the clarity with which it presents an overview of the research question, the scope of the investigation and the conclusion, not on the quality of the research question itself, nor on the quality of the argument or the conclusions.

**Criterion K: holistic judgment**

The qualities that distinguish an essay from the average are rewarded under this criterion. These qualities include intellectual initiative, depth of understanding, insight, creativity and flair. When all these qualities are present, they will identify an essay of outstanding quality. Essays that demonstrate only one or two of them should also be rewarded.

# Philosophy

These subject guidelines should be read in conjunction with the “Introduction,” “Outline” and “Details—all essays” sections of this guide.

## Overview

An extended essay in philosophy provides students with an opportunity to undertake a philosophical investigation into a topic of special interest. The student is encouraged to engage in serious, personal thought, to develop and explore in a disciplined and imaginative way a specific philosophical question appropriate to the subject, and to arrive at a clear conclusion.

## Choice of topic

The chosen topic may be stimulated, for example, by work done in class, by current events, by issues of contemporary debate, by discussion, by private reading and/or reflection, or by conceptual features of belief systems not previously encountered by the student.

A precisely circumscribed topic should be selected, so that it can be treated thoroughly. For example, it may be preferable to choose as a starting point a specific hypothesis rather than a general one, certain of the ideas of one philosopher rather than several, or a single text by a philosopher rather than the whole of his or her work.

A topic should be reconsidered or amended if it is interdisciplinary in nature and/or is not directly related to philosophy.

The following examples of titles for philosophy extended essays are intended as guidance only. The pairings illustrate that focused topics (indicated by the first title) should be encouraged rather than broad topics (indicated by the second title).

- “An analysis of John Rawls’ procedure of justifying principles of social justice” **is better than** “Philosophical views of social justice”.
- “The notion of freedom of speech in Spinoza’s *Theologico-Politico Treatise*” **is better than** “Ethics in the 17th century”.
- “Brahman: the ultimate reality of Sankara’s *Advaita Vedanta*” **is better than** “Philosophical implications of the Hindu scriptures”.
- “Change and continuity: a critical assessment of Herbert Marcuse’s views on art” **is better than** “Philosophical aspects of art and aesthetics”.
- “Doing *versus* being: language and reality in the Mimamsa school of Indian philosophy” **is better than** “Language and the nature of reality”.
- “An examination of the role played by reason in Anselm’s investigation of the concepts of predestination and free will” **is better than** “Anselm’s exploration of the mysteries of faith”.

A necessary condition for a sound philosophical treatment of the topic is a well-formulated research question. Previous experience shows that, in essays where the research question is well focused and stated clearly, the arguments seem to unfold of their own accord. Therefore, the focus of the investigation must be narrowed down as much as possible and stated in a concise and sharply defined research question. Students must choose a research question that can be treated effectively within the word limit and is philosophically relevant. The research question can be formulated as a question or as a statement. Some examples with good results in the past include the following.

|                   |  |
|-------------------|--|
| <b>Title</b>      | <b>Do stem cells have moral status?</b>  |
| Research question | What criterion can be identified in order to ascribe a moral status to stem cells?   |
| Approach          | An explanation and justification of a criterion that allows a moral status to be ascribed to stem cells.   |
| <b>Title</b>      | <b>Asian philosophy of critical thinking: divergent from or convergent to Western fundamental principles?</b>  |
| Research question | What is the nature of the critical thinking that is clearly visible in Indian historical texts such as the <i>Caraka</i> and the <i>Nyayasutra</i> ? |
| Approach          | An exploration and justification of the notion of critical thinking that is found in the <i>Caraka</i> and the <i>Nyayasutra</i> .                   |
| <b>Title</b>      | <b>Art and politics in Hannah Arendt's <i>The Crisis in Culture</i></b>  |
| Research question | In Hannah Arendt's essay <i>The Crisis in Culture</i> , art and politics are not opposed but complementary.  |
| Approach          | An investigation into the relation between art and politics in <i>The Crisis in Culture</i> .  |
| <b>Title</b>      | <b>The roots of wisdom according to the <i>Tao Te Ching</i></b>  |
| Research question | Does wisdom necessarily imply acting in accordance with the order of nature, according to the <i>Tao Te Ching</i> ?                                  |
| Approach          | An exploration of the idea of wisdom according to the <i>Tao Te Ching</i> .  |
| <b>Title</b>      | <b>The scientific character of Freud's interpretation of dreams</b>  |
| Research question | Is Popper's falsifiability an adequate criterion to evaluate Freud's theory of dreams?   |
| Approach          | An examination of whether Popper's falsifiability is an adequate criterion to evaluate Freud's theory of dreams.                                     |

Topics that are mainly dependent on summarizing general secondary sources (such as textbooks and encyclopedias), those that are likely to lead to an essay that is essentially narrative or descriptive in nature, and general topics that are not well focused or are more appropriate to other subjects, should all be avoided.

### Treatment of the topic

Clarity, coherence of ideas and attention to detail are necessary conditions for an effective treatment of a philosophical topic in an extended essay. A lucid understanding of the problem(s) should be demonstrated, and the proposed solution(s) should be logical and well structured. Counterclaims or objections should be envisaged, addressed and, if possible, rebutted.

While irrelevance must be avoided, the wider implications of the philosophical issues raised should be explored to an appropriate degree, and an awareness should be evident of the connections between such issues and more universal concerns of human life.

The treatment of the research question must aim towards its philosophical exploration and the construction of an argument, which presupposes a careful, critical analysis of themes and/or texts. This approach, which allows many different ways of philosophical reflection, is based on the emphasis of the Diploma Programme philosophy course

on **doing** philosophy. Within this context, the aim of a philosophical investigation is to encourage students to develop the ability to reason and argue, and to learn to take a personal and independent position on philosophical issues. This should result in the construction of a personal philosophical argument, which should be cogent, rational, and economical in expression, and should be supported by relevant and, if possible, original examples. It is strongly recommended that any student considering writing an extended essay in philosophy should first read the current *Philosophy guide* and understand its approach.

## Interpreting the assessment criteria

### Criterion A: research question

Although the aim of the essay can best be defined in the form of a question, it may also be presented as a statement or proposition for discussion that is clearly philosophical or open to sustained philosophical analysis and argument.

### Criterion B: introduction

The introduction should relate the research question to existing subject knowledge: the student's personal experience or particular opinion is rarely relevant here. It should explain succinctly the philosophical significance of the topic, why it is worthy of a philosophical investigation and how the research question fits into a philosophical context (for example, a problem, discussion, tradition, or conception). The introduction should refer to the specific research question or to the argument that is going to be developed. Lengthy background information that is not relevant to the question should not be included.

### Criterion C: investigation

When the research question has been established, the student should explore the topic, for example, by making a research plan. The proper planning of an essay should involve interrogating source material in light of the research question. In philosophy, research questions are explored through an examination of themes or texts. Accordingly, the range of sources that could be used is wide, including works of philosophers, dictionaries of philosophy, textbooks and encyclopedias. An appropriate and effective use of sources should take into account the following.

- Descriptive approaches are not adequate for this kind of philosophical investigation. The presentation of information about the issue under discussion should be concise, relevant and directly related to the point that the investigation is trying to make.
- When the research question refers to a source that is not directly philosophical (for example, literature, contemporary issues, cultural or local issues), the examination must be distinctively philosophical.
- If students make use of internet-based sources, they should do so critically and circumspectly in full awareness of their potential unreliability.
- Absolute reliance on textbooks is discouraged and no extended essay in philosophy should be based exclusively on textbooks. They should only be consulted insofar as they may stimulate ideas, provide guidance and encourage the development of a personal investigation.

### Criterion D: knowledge and understanding of the topic studied

The essay demonstrates the student's philosophical knowledge and understanding of the topic when it does the following.

- Identifies and exposes the basic philosophical issues immediately present in the research question
- Presents and discusses philosophical concepts, ideas, arguments, perspectives and positions that are directly relevant to the research question
- Is philosophically well informed and uses the information purposefully in order to broaden the scope of the exploration or to support the argument

- Shows philosophical insight into themes or philosophers' views
- Explores possible ways of understanding the issues or problems discussed
- Shows an awareness of philosophical implications arising from the research question, or the ideas or arguments examined

### **Criterion E: reasoned argument**

Students should be aware of the need to give their essays the backbone of a developing argument: arguments should be focused and sustained. Straightforward descriptive or narrative accounts that lack analysis do not usually advance an argument and should be avoided.

The construction of an argument lies at the very core of a research essay in philosophy. Developing a reasoned argument in philosophy implies at least the following.

- The construction of an argument in a philosophical investigation plays the role of empirical research in empirical sciences, or logical proof in the formal ones.
- Developing a philosophical argument must be clearly distinguished from simply describing or narrating a series of theories or opinions.
- Some students who have not previously written at such length may need guidance about the relation between argument and structure.
- Students should be familiar with the basic features of reasoning necessary to construct personal philosophical arguments in a sound and purposeful way.

### **Criterion F: application of analytical and evaluative skills appropriate to the subject**

Analysis has always been at the heart of philosophical method but it has been understood and practised in many different ways. In one basic accepted sense, it consists of breaking something (an idea, a topic or a question) down into its components. Analysis might also be characterized as disclosing or working back to what is more fundamental by articulating relevant elements and structures, on the basis that more fundamental concepts have a broader explanatory power. In turn, evaluation in a philosophy extended essay should be the result of students developing their exploration and own line of reasoning concerning the research question. However, this must be carefully distinguished from the mere statement of opinions or beliefs that are not the result of the specific investigation. Analytical skills are shown by means of an in-depth and extensive critical philosophical treatment and discussion of themes, basic concepts and arguments; whereas evaluative skills are exhibited when ideas, arguments and perspectives are assessed from a consistently held and well-justified perspective with clear evidence and strong support.

The exploration of the research question implies the development of analytical and evaluative skills, which is usually carried out through an examination of themes and texts. The following statements suggest an approach that may enable students to research themes or texts in a consistent way. They are not the only directions that can be taken into account but they provide a starting point from which students can develop into independent researchers in philosophy. Students should adopt a similar approach when they examine a philosophical issue or when they investigate a philosophical argument presented in a text. In the case of themes, students should:

- identify the research question
- ask themselves what they think about the question asked or the hypothesis stated, taking into account their own and other perspectives
- present reasons that support their position
- put forward possible objections or counter-arguments that could be levelled against their position

- suggest strategies for overcoming these objections or counter-arguments
- illustrate their position and counter-positions with supporting examples and relevant cases
- offer a possible and consistent answer to the question asked or a relevant exploration of the hypothesis stated, evaluating strengths and weaknesses.

In the case of texts, students should adopt the same approach. Students should always be careful not to refer to the text or the author as an authority. In addition, students are expected to:

- identify the philosophical issue raised by the text
- identify the author's standpoint in the text
- state what they think about the author's standpoint
- develop and explore their own position on the author's standpoint by:
  - acknowledging alternative approaches to the text
  - considering how different approaches to the text enable them to progress their own thinking about the question posed.

### **Criterion G: use of language appropriate to the subject**

An appropriate use of language in a philosophy extended essay implies at least both of the following.

- A well-informed knowledge of the terminology of basic philosophical concepts and of the specific fundamental concepts relevant to the themes, authors or texts at work in the investigation.
- A clear and effective communication of the exploration undertaken or a precise formulation of the argument presented.

Moreover, it could be useful to take into account the following.

- The analysis and use of philosophical language should be directly related to, and functional for, the specific investigation.
- Many expressions belonging to philosophical terminology (definition, concept, thought, experience, perception, world and so on) are also part of everyday language. A clarification of their use, for example, the definition of a philosophical context, should be provided when needed for the investigation.
- Many thought processes implied in philosophy research are directly related to the use of language. Descriptions of what activities such as "formulate", "examine" and "define" mean can be found in the "Glossary of command terms" section in the current *Philosophy guide*.

### **Criterion H: conclusion**

"Consistent" is the key word here: the conclusion should develop out of the argument and not introduce new or extraneous matter. It should not repeat the material of the introduction; rather, it should present a new synthesis in light of the discussion. Students should reflect on the argument that they have presented and draw conclusions from it.

### **Criterion I: formal presentation**

This criterion relates to the extent to which the essay conforms to academic standards about the way in which research papers should be presented. The presentation of essays that omit a bibliography or that do not give references for quotations is deemed unacceptable (level 0). Essays that omit one of the required elements—title page, table of contents, page numbers—are deemed no better than satisfactory (maximum level 2), while essays that omit two of them are deemed poor at best (maximum level 1).

The layout, organization, appearance and formal elements of the essay should help the organization and presentation of the philosophical argument. For instance, the contents list should indicate specific issues that are relevant to it. The division of the essay into generic “Introduction”, “Development” and “Conclusion” sections does not help to identify and elucidate the purpose and structure of a particular argument. Subdividing the essay into sections with specific names tends to tighten up the structure and make clearer the transitions in lines of thought.

The bibliography should contain all sources used, with details of the author, title of publication, publisher and date of publication, which should be in alphabetical order (by author’s family name). Any material that is not original must be acknowledged.

### **Criterion J: abstract**

The abstract is judged on the clarity with which it presents an overview of the research and the essay, not on the quality of the research question itself, nor on the quality of the argument or the conclusions. The result of a philosophical investigation is the argument that is presented and developed. Therefore, the abstract must be focused on the argument, its structure and content.

### **Criterion K: holistic judgment**

Qualities that are rewarded under this criterion include the following.

- Intellectual initiative: Ways of demonstrating this in philosophy essays include the choice of topic and research question, skillful use of conceptual tools (such as examples), finding adequate resources (such as theories relevant to an analysis of the research question) and new approaches to familiar topics.
- Insight and depth of understanding: These are most likely to be demonstrated as a consequence of detailed research, in reflection that is thorough and well informed, and in reasoned argument that consistently and effectively addresses the research question. Furthermore, they can be shown by means of an honest, open-minded, careful engagement with philosophical ideas that are deemed to be important, no matter what school or tradition they are derived from.

## Physics

These subject guidelines should be read in conjunction with the “Introduction”, “Outline” and “Details—all essays” sections of this guide.

### **Overview**

An extended essay in physics provides students with an opportunity to apply a range of skills while researching a topic of personal interest in the field of physics. A physics extended essay is characterized by a particular emphasis on physics within a more general set of scientific criteria. An extended essay in physics must take the form of a research paper involving a hypothesis or a model, or a critical analysis, that demonstrates argumentation, comparison, or the extraction of relevant information or data.

The outcome of the research should be a coherent and structured piece of writing that effectively addresses a particular issue or research question and arrives at a particular, and preferably personal, conclusion.

### **Choice of topic**

It is important that the extended essay has a clear emphasis on physics and is not more closely related to another subject. A physics extended essay should, therefore, have a basis in physical theory and emphasize the essential nature of the subject. An extended essay in an interdisciplinary area such as materials science will, if registered as a physics extended essay, be judged on its physics content, not its chemical content.

The purpose of the essay is not principally to inform the reader about a specific topic, nor should it be a summary of the latest discoveries in physics. The student must be personally involved with the subject matter and not simply an informant. The topic should represent a challenge for the student.

Some topics may be unsuitable for investigation because of safety issues. For example, experiments involving dangerous or carcinogenic substances, radioactive materials, lasers, microwaves, UV light, noise or heavy equipment should be avoided unless adequate safety apparatus and qualified supervision are available. Typical experiments done in class, not suitable in themselves as a basis for an extended essay, can be a source of good topics.

Students should choose a well-focused, well-defined and realistic topic that allows for an in-depth treatment. Broad or complex survey topics, for example, investigations into black holes, gravity, time machines, the Higgs particle or the fate of the universe, will not permit the student to discuss conflicting ideas and theories, nor to produce an in-depth personal analysis within the word limit. Also, by definition, some topics are not suitable for an extended essay in physics, which is an experimental science with a specific approach and techniques.

Students should also be careful to avoid research topics that go beyond the boundaries of conventional science, for example, areas that are more related to metaphysics or pseudo-science. Examples of this could include the unknown forces of pyramids, physics and God's existence, and extrasensory perception.

The following examples of titles for physics extended essays are intended as guidance only. The pairings illustrate that focused topics (indicated by the first title) should be encouraged rather than broad topics (indicated by the second title).

- "Orbital determination of a minor planet" **is better than** "Gravitation".
- "The variation in resistance of a wire subjected to different strains" **is better than** "Measuring the resistivity of different materials".
- "The use of interference fringes to measure small displacements" **is better than** "Making interference patterns".
- "The range variation of water flowing out of a hole in a container" **is better than** "An application of Bernoulli's principle".
- "The impact of the resistivity of the metal of a pipe and the pipe's wall thickness on the terminal velocity of a cylindrical magnet falling down the metallic pipe" **is better than** "Eddy currents".

Moreover, it may help if the student further defines the topic chosen for study in the form of a research question, followed by a statement of intent that indicates which broad process is going to be used in answering the question. In this way, the approach to the topic chosen may be even further clarified. Some examples of this could be as follows.

|                   |   |
|-------------------|---|
| <b>Title</b>      | <b>Black hole at the centre of the Milky Way</b>  |
| Research question | Is it possible to determine the presence of a black hole at the centre of the Milky Way?  |
| Approach          | A data-based approach is taken. From the astronomical observations of a star following a Keplerian orbit around a compact radio source, the mass of a supermassive black hole is determined. The level of uncertainty is appreciated. |
| <b>Title</b>      | <b>The wine bottle as a Helmholtz resonator</b>   |
| Research question | Do wine bottles of different shapes behave as Helmholtz resonators?   |



|                   |  |
|-------------------|--|
| Approach          | An experimental approach is taken. The theoretical model is reviewed with specific emphasis on the physical and geometrical parameters determining the resonant frequency. By blowing across the opening of the bottle, a resonant frequency is produced, picked up and measured. The accuracy of the model is determined. |
| <b>Title</b>      | <b>The deflection of starlight by the Sun's gravitational field</b>  |
| Research question | What will be the angular deflection of starlight by the Sun if Newton's Universal Law of Gravitation is applied?   |
| Approach          | A theoretical (numerical) approach is taken. Assuming a corpuscular model of light, the motion of these corpuscles moving at the speed of light in a gravitational field is followed by iteration. The results are compared to the one derived from general relativity.  |
| <b>Title</b>      | <b>The efficiency of electromagnetic damping</b>   |
| Research question | Is the efficiency of electromagnetic damping of a moving glider a function of the initial kinetic energy of the glider?  |
| Approach          | An experimental approach is taken. The energy budget of a coil-carrying glider going through magnetic braking on a linear air track is followed by comparing the mechanical energy lost to the thermal energy generated in the coil.   |

However, the aim of the essay may also be presented as a statement or as a hypothesis rather than an actual question. Some examples are as follows.

- The objective is to establish theoretically the proportionality existing between the terminal velocity of a cylindrical magnet falling down a metallic pipe and the resistivity of the metal of the pipe as well as the pipe's wall thickness. An experimental investigation follows.
- Water waves are observed in a long and narrow trough and their speeds are measured. It is assumed that, for shallow water, the speed of the wave will be proportional to the square root of the depth of the water and independent of the wavelength.
- The objective is to establish the relationship between power and temperature for an incandescent lamp.
- A retractable ballpoint will be used to test the law of energy conservation.
- The objective is to establish an acoustic model of the concert flute.

In first-hand experimental essays, students should choose sensible and feasible experiments that do not require extensive lengths of time for the construction of apparatus. Highly sophisticated instruments are not required: in some cases, they can impose limitations and hinder the understanding of a phenomenon. Successful experiments will produce relatively rapidly the data necessary for a sound analysis.

Ideally, students should carry out the research for the essay solely under the direction of the school supervisor. Some of the best essays have been written by students investigating relatively simple phenomena using standard school apparatus, and this approach is to be encouraged. Regardless of where, or under what circumstances, the research is carried out, students must provide evidence in the essay of their personal contribution to the research approach and to the selection of the methods used. Essays based on research carried out by the student at a research institute or university, under the guidance of an external supervisor, must be accompanied by a covering letter outlining the nature of the supervision and the level of guidance provided.

The domains of aerodynamics and hydrodynamics are theoretically and experimentally very demanding; for example, the construction of wind tunnels can be problematic and time-consuming. A topic within these domains must be chosen and defined very carefully.

Physics applied to sports can be a source of excellent topics, although the acquisition of sufficient valid data can sometimes be problematic. The relevant biomechanics can be overwhelming.

Students must choose a research question that can be treated effectively within the word limit and is not of a trivial nature.

## Treatment of the topic

Every extended essay in physics will involve some research into the background or theory of the topic selected. However, extended essays in physics may then vary. Students may choose any of the following approaches.

- **Experimental:** design and implementation of an experiment, then personal collection and analysis of the data.
- **Data-based:** location and extraction of raw or processed data, not collected directly by the student, which is then further refined and analysed.
- **Theoretical:** development of a quantitative or semi-quantitative description of some physical phenomenon, exercise of the model, predictions about its behaviour and limitations.
- **Survey:** formulation of a cohesive, ordered, analytical and supported (qualitative and quantitative) discussion of the topic.
- **Combination:** some combination of the approaches listed above.

All extended essays in physics should summarize the scope and limitations of the work undertaken. This should always include analysis of any experimental design, uncertainties and precision of data, mathematical techniques, relationships with theoretical models, and reliability and quality of sources. The essay content and development should directly evaluate the research question, possibly in the form of a test of a hypothesis.

Experimental essays allow students to display their own critical thinking skills in a more discernible fashion, but experimental work is **not** a requirement for a physics extended essay. However, a theoretical dimension must be part of any empirical investigation.

Any experimental work that forms part of a physics extended essay should be adequately described to allow the work to be repeated by others, who should achieve similar outcomes and conclusions. Particular care should be taken with data obtained through secondary sources. For data-based essays, the location and reliability of the sources needed should be considered at the start of the planning stage. Students must scrutinize such data and the experimental design with the same care that they would apply to data that they have collected themselves. A careful scrutiny of research procedures could reveal serious flaws in experimental design or in data collection that invalidate the results in whole or in part, or at least limit the interpretation.

A purely empirical investigation relating two or three variables in the absence of any theoretical foundation is **not** satisfactory—for example, an investigation involving only a mathematical analysis of the gathered data relating the index of refraction of an Epsom salt solution to the salt concentration. In such an essay, the student would be expected to investigate the theoretical physics relating the index of refraction to the concentration.

If a computer simulation of a theoretical model is used, the algorithms developed or employed should be thoroughly analysed and simulation outcomes compared with reality to check their validity. For essays involving a theoretical model (computer simulation) describing a physical phenomenon, the planning should include the initial postulates, the key steps in the running of the model and the simulation outcomes gathered. Charts or code fragments may be used in the body of the essay to illustrate how the model was translated into software, but the

programs themselves should be placed in the appendix. Each line of code of a program fragment included in the body of the essay should count as two words towards the word limit. The focus of any extended essay that uses a computer to build and exercise models, or to analyse data, must be on the discipline of physics, not the software.

In theoretical, data-based or survey essays, an evaluation of the quality and reliability of the literature sources used must be part of the essay. Students must have read enough about the topic to make a value judgment about the reliability of the sources. This can be achieved by researching secondary sources or by performing their own calculations. Students should not hesitate to discuss conflicting ideas and present their own opinions with their own arguments. In survey or theoretical types of essays, proper planning should involve interrogating source material in light of the research question, so that the views of other scientists are used to support the student's own argument, and not as a substitute for that argument. It may thus be helpful for a student to challenge a statement by a scientist, in reference to the topic being studied, instead of simply agreeing with it, where there is evidence to support such a challenge.

Analysis must complement data or information and not simply repeat it, while an interpretation should be deduced logically from the data or information. Unfounded, far-fetched extrapolation should be avoided and shortcomings recognized. The discussion should not be a rewording of results; it should generate a solid interpretation of the results to be compared to published research on the topic.

Absolute reliance on textbooks and the internet is discouraged and no extended essay in physics should be based exclusively on such sources. Textbooks should be consulted only insofar as they may stimulate original ideas, provide models of disciplined, structured and informed approaches, and encourage direct and personal involvement with the essay topic. If students make use of internet-based sources, they should do so critically and circumspectly in full awareness of their potential unreliability. There are ways to verify the credibility of sources and a librarian could advise about this.

### **Introduction to the essay**

In the introduction, it is usually appropriate to identify the relevant principles of physics. For example, the understanding of the motion of a cylindrical magnet falling inside a copper pipe requires the application and integration of the Laws of Electromagnetic Induction and Newton's Laws of Motion. Students are expected to show that they are able to identify completely the relevant theory in the context of the research question and can apply it correctly. In the previous example, a brief qualitative description of the forces acting on the falling magnet and their possible variations along its path will achieve this goal. If a historical set-up is appropriate, it should be restricted and focused rather than general and exhaustive. Some topics require some background foreign to physics—for example, physics applied to sports or archeology. In such cases, only the essential non-physics information should be provided in the introduction. If it is considered necessary that more information should be included, then the appropriate place for it is the appendix.

In the introduction, the student must also show why the topic is worthy of investigation. The opportunity or potential for creativity and initiative is a measure of the significance (importance) and worthiness of the topic chosen. Some topics may be unsuitable because the outcome is already well known and documented in standard textbooks, and the student may not be able to show any personal input.

### **Presentation**

It is difficult to be precise about the 4,000-word limit in physics as most essays include tables, graphs, figures, diagrams, equations and calculations. Examiners will follow the spirit of the word limit so that an essay that is excessive in length will be penalized. For experimental or data-based essays, a typical layout will follow the order of tables of data, graphs, analysis and conclusion. If the investigation is divided into two or more parts, it is recommended to repeat this order for each part with a brief overview conclusion presented at the end of the essay. If data and graphs are too numerous, they should be included in an appendix. However, it is essential that the reader is able to follow the development of the essay without having to refer to the appendix. The core of the essay

should be complete and stand on its own, with the collection of all tables, graphs and diagrams inserted in the order required to allow for an easy reading and understanding.

Tables, graphs and diagrams should be numbered so specific references can be made to them in the body of the essay. It is not necessary to include an appendix, but where one is used, it should not be done as an attempt to evade the 4,000-word limit. It is good practice to show one example of the calculations of numerical results, including the calculation of errors. The components of the table of contents should be made specific to the topic of the essay. A generic list of contents such as “theory”, “experiment”, “data”, “analysis”, “conclusion” and “bibliography” is not satisfactory. General knowledge such as Newton’s Law of Gravitation, definitions, or the Doppler effect does not require any reference.

An extended essay in physics could include elements typically part of the report of an experimental investigation within the internal assessment documentation. However, the formal presentation of the extended essay is different from a laboratory report. For example, an annotated diagram can be included in the essay but an exhaustive list of equipment should not. Students are encouraged to look up scientific papers or articles published in recognized physics journals or magazines.

### **Academic level**

Essays in theoretical physics should cover material extended from the Diploma Programme physics course covered in the classroom—for example, “The application of Huygens’ principle to a single slit using the iterative method”, or material from outside the course—for example, “The impact of solar light pressure on an orbiting satellite”.

Essays in experimental physics should cover topics not included in the school course’s regular investigations—for example, “Are the tiny droplets produced by the impact of raindrops on a hard surface electrically charged?”.

Sophisticated computer interface equipment should be used as a tool, not an end in itself. The reliability and limitations of such equipment should be looked at. A simple use of simulation programs would not necessarily reveal a student’s creativity and mastery of physics—for example, the simple measurements of the harmonics of a stringed musical instrument by an electronic probe would reveal little of the student’s intellectual abilities.

### **Abstract**

Students are encouraged to look at abstracts of scientific research papers published in recognized physics journals or magazines.

## **Interpreting the assessment criteria**

### **Criterion A: research question**

Although the aim of the essay can best be defined in the form of a question, it may also be presented as a statement or proposition for discussion. Whichever way it is formulated, the research question must be:

- appropriate to physics as a science; centred on physics and not on peripheral issues such as the history of physics or social implications of discoveries in physics
- identified clearly and set out prominently in the introduction.

An effective treatment within the word limit requires a narrow and well-focused topic.

### **Criterion B: introduction**

The introduction should relate the research question to existing subject knowledge: the student’s personal experience or particular opinion is rarely relevant here. The relevant principles of physics should be situated in the context of the topic.

The introduction should not be seen as an opportunity for padding out an essay with a lengthy account of the context of the physics involved.

### **Criterion C: investigation**

The way in which the investigation is planned will depend on the approach chosen by the student. However, the plan should include the relevant theory as well as an appreciation of the uncertainties or limitations inherent to techniques and apparatus.

### **Criterion D: knowledge and understanding of the topic studied**

The knowledge and understanding demonstrated in a physics essay should extend from the Diploma Programme physics course or laboratory. The fundamental knowledge acquired in the classroom could be applied to a new physical situation that requires an interpretation of this knowledge. A purely empirical approach seriously limits the level of knowledge and understanding of the physics related to a topic, and consequently should be avoided.

### **Criterion E: reasoned argument**

Students should be aware of the need to give their essays the backbone of a developing argument. Personal views should not simply be stated but need to be supported by reasoned argument to persuade the reader of their validity. For example, it is not sufficient to write “From the graph we can see that...”. Straightforward descriptive or narrative accounts that lack analysis do not usually advance an argument and should be avoided.

A well-organized and well-presented essay will enhance the clarity of an argument.

### **Criterion F: application of analytical and evaluative skills appropriate to the subject**

Physicists use mathematics as a tool. This tool should not replace the relevant physics, nor become the goal itself rather than the instrument used to reach the goal. The student should show an understanding of the statistics and mathematical relationships produced automatically by software programs. A complete and solid understanding of the intrinsic limitations of an investigation, and their implications for the conclusions reached, is essential. It should be shown in some way that a given proposed limitation, possibly procedural, does have the expected impact on the final results and conclusion, for example, in the case where experimental results are compared to standard values. A proper manipulation of significant digits and uncertainties, including uncertainty in the mean and in graphs, is expected, as well as an understanding of propagation of errors.

### **Criterion G: use of language appropriate to the subject**

Scientific language must be used throughout the essay. Students should be encouraged to read articles from recognized scientific journals or magazines to learn about the proper style, organization and presentation of a scientific paper. The essential quality of the language relates to exactness and precision, and typical expressions, such as “function of” or “proportional to”, carry specific meanings. A curve on a graph cannot be qualified as “exponential” or “quadratic” without proper analysis. Any symbols used must be clearly and fully identified in the context of the situation; for example, writing “t for time” would not be sufficient but writing “t for time during which the magnetic force is applied” would be precise and helpful.

### **Criterion H: conclusion**

“Consistent” is the key word here: the conclusion should develop out of the argument and not introduce new or extraneous matter. It should not repeat the material of the introduction; rather, it should present a new synthesis in light of the discussion.

The conclusion should reveal the impact on the final results of the investigation of uncertainties in experimental data, the limitations of a model or of an experimental design, or the validity of sources.

### **Criterion I: formal presentation**

This criterion relates to the extent to which the essay conforms to academic standards about the way in which research papers should be presented. The presentation of essays that omit a bibliography or that do not give references for quotations is deemed unacceptable (level 0). Essays that omit one of the required elements—title

page, table of contents, page numbers—are deemed no better than satisfactory (maximum level 2), while essays that omit two of them are deemed poor at best (maximum level 1).

### **Criterion J: abstract**

The abstract is judged on the clarity with which it presents an overview of the research and the essay, not on the quality of the research question itself, nor on the quality of the argument or the conclusions.

### **Criterion K: holistic judgment**

Qualities that are rewarded under this criterion include the following.

- Intellectual initiative: Ways of demonstrating this in physics essays include the choice of topic and research question, and locating and using a wide range of sources, including some that may have been little used previously or generated for the study.
- Insight and depth of understanding: These are most likely to be demonstrated as a consequence of detailed research, reflection that is thorough and well informed, and reasoned argument that consistently and effectively addresses the research question.
- Originality and creativity: In physics, these include looking inquisitively at the surrounding world, innovation in experimental procedures and equipment to measure variable parameters, an inventive approach to physical analysis or to classical topics, as well as the construction of imaginative theoretical models.

## Politics

These subject guidelines should be read in conjunction with the “Introduction”, “Outline” and “Details—all essays” sections of this guide.

### **Overview**

An extended essay in politics provides students with an opportunity to undertake an in-depth study of a specific political question. The outcome of the study should represent a focused, effectively organized analysis that addresses the question and investigates its specifically political dimension.

### **Choice of topic**

Politics is a discipline that can draw reference from almost any human activity and politics essays can quite legitimately be concerned with varied activities from United Nations peacekeeping to the decisions of local school authorities. The key consideration in judging the quality of essays in such a diverse field is the extent to which they deal with political institutions, use the tools of political science (broadly defined) and address the concerns of relevant political theories.

The choice of topic must be such that **all** the various assessment criteria can be satisfied. Students are advised to avoid topics that are too broad in scope to permit an in-depth study within the prescribed word limit. A limited, specific topic, thoroughly researched and with a clear focus, is preferable to a broad topic that can only be examined superficially.

The importance of choosing a topic that permits the gathering and sorting of relevant information, and that connects with broader political concerns, cannot be overstated. This will prevent the content of the essay from being merely superficial or generalized, or, worse still, tangential to the discipline of politics. If these matters are given due formal consideration, then the selection of a suitable topic, as well as the structure and presentation of the essay, can be addressed.

This important point is best illustrated by example. The question “Is the US government losing the drugs war?” is not well formulated but could, nevertheless, form the basis of a sound politics extended essay. It should focus on the nature of the problem in broad political terms, analyse the policy-making machinery, and consider the role of government institutions and the part played by pressure groups and public opinion. It should discuss the problems within the framework of relevant political theories and reach its conclusion on the basis of these investigations. An essay that simply gave a detailed account of the prevalence of various forms of drug abuse and showed how drugs have an impact on people’s lives, however well written and researched, would be tangential to politics.

The following examples of titles for politics extended essays are intended as guidance only. The pairings illustrate that focused topics (indicated by the first title) should be encouraged rather than broad topics (indicated by the second title).

- “The politician as representative: an assessment of the effectiveness of a local politician in representing local interests” **is better than** “A week in the life of a politician”.
- “The political debate over the death penalty in the USA” **is better than** “The rights and wrongs of capital punishment”.
- “The concept of ‘the dictatorship of the proletariat’ in Marxism-Leninism” **is better than** “Marxism-Leninism”.
- “US intervention in Grenada: a study of the War Powers Act and the war-making powers of the US president” **is better than** “The US president and US foreign policy”.
- “A comparison of the nationalist vote in Scotland and Wales in the British general elections of 2005” **is better than** “The British general election of 2005”.

## Treatment of the topic

As the previous examples illustrate, topics for extended essays in politics may be drawn from any one of the various areas of the discipline, such as political thought, political institutions, international or comparative politics, or political behaviour. Whatever area is chosen, it should be one of genuine interest to them.

Essays about local politics (for example, an investigation into the work of some aspect of local government or local interest group) are acceptable, provided that they are approached with sufficient methodological rigour and are not largely anecdotal. In such a study, relevant theoretical perspectives on representation could be considered.

Ideas for topics may be stimulated by current events, but essays should move beyond the mere description of such events. Comparative perspectives may offer another useful approach, but a clear focus must be maintained if the topic is not to become unwieldy or overly descriptive. Theoretical perspectives will also enhance such studies.

It is helpful for the student to consider how the study will conclude before beginning to write it. The conclusion must be seen to provide a comprehensive judgment on the inquiry and to follow logically from the argument. If the student has a clear idea of the conclusion, it becomes easier to construct a logically consistent argument. For example, if the research question is whether a decision by a local education board was democratic, it will help if, having done the background research, the student decides on the conclusion before writing the study. It would naturally follow that the structure of the essay would incorporate a discussion of those theories of democracy that led the student to this conclusion. In this way, the study would be stronger both structurally and thematically.

The use of clear, relevant diagrams, graphs and/or statistical tables should be encouraged where appropriate. Where these are derived from other sources, these sources must be acknowledged.

Studies of traditional political ideas or theories, or of past events or issues, are unlikely to involve the major use of primary sources. In other studies in the discipline of politics, however, the use of primary sources, such as interviews, and newspaper and documentary sources, is strongly recommended. The internet is an almost universal

source of information today and it is often invaluable, but it is important to recognize that secondary sources, especially established treatments of the themes of the study, remain crucial. Indeed, if a student does not refer to established secondary sources that deal with the principal themes, the study might be deemed to be unsatisfactory and could be tangential to the discipline of politics.

Some examples of possible topics and approaches include the following.

|                   |  |
|-------------------|--|
| <b>Topic</b>      | <b>Is the US government losing the drugs war?</b>  |
| Research question | Is it politically possible for the US government to win the drugs war?   |
| Approach          | An investigation into the pressures and constraints on government institutions and agencies, within the framework of relevant political theories. A catalogue of the social consequences of drug misuse would not be appropriate.  |
| <b>Topic</b>      | <b>Does the British Conservative party have a future?</b>  |
| Research question | Which social and political values should a modern British Conservative party seek to conserve?   |
| Approach          | An assessment of the relevance to modern British politics of the values that Conservatism has traditionally championed and a judgment on how (if at all) they should be amended. Students would refer to traditional Conservative theorists and to modern quality journalism. Interviews with local and national activists would be helpful. An essay that simply described the problems that the party faces in seeking to increase its share of the vote would not be appropriate. |
| <b>Topic</b>      | <b>Why the US policy on Iraq is failing</b>  |
| Research question | Account for the domestic unpopularity of the US-led invasion of Iraq.  |
| Approach          | An investigation into the changing balance of popularity of the invasion and its aftermath, primarily through the use of survey material. Students would need to discuss the issue of international legality and the attitude of other governments, and, finally, to comment on the difficulty of achieving the invasion's aims. In such an essay, balance would be important: an essay that constituted a selection of partisan internet articles would not be appropriate.         |

## Interpreting the assessment criteria

### Criterion A: research question

The research question must be appropriate to the particular subject in which the essay is submitted. In politics, the subject matter **must** lend itself to assessment through the criteria specifically appropriate to politics. Although the focus of the essay can be best defined as a question, it may also take the form of a hypothesis or proposition.

### Criterion B: introduction

The introduction should explain succinctly the significance of the topic, why it is worthy of investigation and how the research question relates to existing knowledge on the topic. The student's personal experience or particular opinion is rarely relevant here.

### Criterion C: investigation

Students should aim to make use of both primary and secondary sources as appropriate. Source material should not simply be repeated but should be deployed subtly, or even challenged, in a balanced way. It should always be used in support of a student's argument, not as a substitute for such argument. The internet can be an invaluable



source of information but students are strongly advised neither to use it to the exclusion of any other source material, nor to assume that information obtained from websites is necessarily accurate or unbiased. Students are strongly advised to consult the relevant established texts.

**Criterion D: knowledge and understanding of the topic studied**

Knowledge and understanding here relates specifically to the political/historical context of the subject of the essay, and to the political institutions, actors and theories relevant to the area of study.

**Criterion E: reasoned argument**

Students should be aware of the need to give their essays the backbone of a developing argument. Personal views should not simply be stated but need to be supported by reasoned argument and reference to accepted sources. Straightforward descriptive or narrative accounts that lack analysis do not usually advance an argument and should be avoided. It is crucial, when constructing an argument in politics, to seek to achieve a balance, by presenting conflicting views in an impartial way before reaching a conclusion. Lack of balance in a politics essay constitutes a flaw.

**Criterion F: application of analytical and evaluative skills appropriate to the subject**

The employment of analytical and evaluative skills appropriate to politics will raise an essay from a largely descriptive account to a truly incisive and illuminating one. Students should bear in mind that such an account would answer not only the formal questions—such as who, when, and where—but also the more demanding and interesting questions of how and, above all, why.

**Criterion G: use of language appropriate to the subject**

It is expected that students will be familiar with the basic vocabulary that is appropriate to politics, such as the executive, judicial and legislative arms of government. They should know that contested or ambiguous terms may need to be defined. It is not expected that they will use various pieces of specialized jargon from little-known sub-disciplines within politics, such as game theory or public choice theory.

**Criterion H: conclusion**

Students should reflect on the research that they have presented and draw conclusions from that research. New information should not be introduced into the conclusion, although the identification of new questions arising from the research is encouraged. Students should avoid conclusions that are perfunctory; to be effective, conclusions should be consistent with the arguments developed in the essay and provide a synthesis of those arguments.

**Criterion I: formal presentation**

This criterion relates to the extent to which the essay conforms to academic standards about the way in which research papers should be presented. The presentation of essays that omit a bibliography or that do not give references for quotations is deemed unacceptable (level 0). Essays that omit one of the required elements—title page, table of contents, page numbers—are deemed no better than satisfactory (maximum level 2), while essays that omit two of them are deemed poor at best (maximum level 1).

It is important that students give proper attention to the formal layout and organization of the essay, and follow the prescription set out in the general guidelines. Careful recording of the relevant details of all evidence significant to the research question is necessary so that complete references, including page numbers, can be provided in the essay. The bibliography should contain all sources used, with details of the author, title of publication, publisher and date of publication, which should be in alphabetical order (by author's family name). Tables and charts should appear in the body of the essay, as close as possible to their first reference. All material that is not original must be acknowledged.

### **Criterion J: abstract**

The abstract is judged on the clarity with which it presents an overview of the research and the essay, not on the quality of the research question itself, nor on the quality of the argument or the conclusions. Students are required to set out clearly their research question or hypothesis, and explain how they approached their investigation and the conclusions that they reached.

### **Criterion K: holistic judgment**

Qualities that are rewarded under this criterion include the following.

- Intellectual initiative: Ways of demonstrating this in politics essays include the choice of topic and research question, locating and using sources that have been little used previously, and new approaches to traditional topics (based on a re-evaluation of accepted theories).
- Insight and depth of understanding: These are most likely to be demonstrated as a consequence of focused research, of thorough and well-informed reflection, and of reasoned argument that consistently and effectively addresses the research question.

## Psychology

These subject guidelines should be read in conjunction with the “Introduction”, “Outline” and “Details—all essays” sections of this guide.

### **Overview**

An extended essay in psychology provides students with an opportunity to investigate an area within the field of psychology that is based upon personal interest, and which may well go beyond the Diploma Programme psychology course. Students are able to pursue actively a research question that will develop their analytical and communication skills, and their understanding of behaviour. At the same time, the extended essay aims to introduce students to the excitement of academic discovery.

The current *Psychology guide* defines the nature of the subject as “the systematic study of behaviour and experience”. Students should have a well-developed understanding of what falls within the scope of psychology when they are developing their topic. Psychology involves studying the behaviour of human as well as non-human animals. It has its own specialist terms, methods and literature. It is essential for students undertaking an extended essay in psychology to have a reasonable understanding of the subject and its methodologies.

Psychology is not a “residual” category for essays that do not fit into any other extended essay subject. Students must choose topics that lend themselves to psychological investigation and analysis, and must carefully consider their choice of topic in terms of the assessment criteria.

### **Choice of topic**

An extended essay in psychology allows students to investigate a topic of personal interest in a systematic manner. The essay should be based on a well-focused research question that the student attempts to answer throughout the course of the essay. The essay should be considered more of an investigative, analytical argument than a research hypothesis to be uncovered by use of research methods in a formal psychological study. Data collection and research methods, such as experiments, surveys, observations and case studies, are not appropriate for a psychology extended essay, and should not form part of the student’s project.

Psychology is a broad field that has many subsets and specialties, providing a wide range of possible topics. Past experience strongly suggests that personal interest plays an important role in the success of an essay and it is recommended that students consider their own personal interests, such as sport or child development, as a starting

point in the process. After selecting a field of interest, students can then consider areas of investigation within that field in order to narrow the scope of their essay and research question. For example, a student might be highly interested in commercial aviation. Many large commercial airlines employ psychologists to investigate pilot performance and factors such as stress or emergency management. A research question that may follow from this could be “To what extent has research on stress with airline pilots improved airline safety standards?”. Additional examples are provided later in this section.

The topic selected need not be from the current *Psychology guide*. In fact, some of the most interesting, engaging and successful extended essays are not necessarily based solely on material learned as part of the psychology course. Essays confined to the guide often produce descriptive, dispassionate accounts of classic psychological research. Supervisors do not need to have detailed knowledge of the student's topic: this is a less important factor in topic selection than availability of resources, student interest and the scope of the essay.

Topics that generally fall within the area labelled as “pop psychology” or “self-help” are usually not appropriate for the extended essay. As noted in the definition, psychology is a systematic study. Psychologists conduct research studies and develop theories in their attempt to understand behaviour and experience. Psychology extended essays must be supported with careful and appropriate citation of relevant theories and/or studies within psychology. This implies that the best resources are academic and psychological research journals and texts. Anecdotal support or references from popular publications do not form an appropriate base from which to develop an extended essay in psychology. Additionally, popular topics such as eating disorders, dysfunctional behaviour (such as schizophrenia and depression) and forensic psychology pose a challenge to students unless they have a tightly focused research question. These are very ambitious topics that need far more time and experience than students have at their disposal.

The research question must be focused and provide direction for a psychological argument, issue or topic. Topics that are general in nature inevitably lead to a descriptive and superficial recounting of what can be found in many resources, rather than the development of an argument that attempts to answer a specific question. A more focused question leads to a more tightly developed essay that makes appropriate use of psychological research as the basis for a reasoned argument. While the research question does not need to be phrased as a question, to encourage focus within the essay, it is often helpful to the student if the research question is thought about as an actual question itself. In this way, students can ask themselves “Have I answered this question?”. It is also appropriate for the title to be phrased similarly to the research question, which, again, refocuses the development of the essay.

The choice of topic is best described as a logical process that starts with a field of psychology that is of personal interest to the student. This choice may be further refined to a topic of study within the broader field. From this decision, a research question is developed that may best be constructed in the form of a question, followed by a statement of intent that indicates the approach that is going to be used in answering the question. In this way, the approach to the topic chosen may be even further clarified. Some examples of this could be the following.

|                          |  |
|--------------------------|--|
| <b>Student interests</b> | <b>Football: "Choking" under pressure during an important match</b>  |
| Field of psychology      | Sport psychology   |
| Topic                    | Arousal and athletic performance   |
| Research question        | What levels of psychological arousal are most effective for players in team sports?  |
| Approach                 | Arousal levels and their effects on athletic performance have been subjected to many studies. One of several comparative approaches could be used, for example, qualitative and quantitative |

|                          |   |
|--------------------------|---|
|                          | methods, collectivist and individualist cultures, male and female. These approaches could include reference to gender, methods, ethics or culture. It is suggested that students consider the advantages of confining their research to one specific sport for which they have enthusiasm and, preferably, personal experience in performing.   |
| <b>Student interests</b> | <b>Perception, culture, website design</b>  |
| Field of psychology      | Cognitive psychology  |
| Topic                    | Cultural differences in perception and eye movement patterns  |
| Research question        | How can findings from psychological research on perception differences between Asians and Americans be applied to website design?   |
| Approach                 | Research must be conducted from secondary sources to establish the extent of perceptual differences that are claimed to exist between the two cultures. How are findings from relevant studies applied to strategies that involve visual perception and eye movement patterns, and what industries use this information? Specifically, how do international website designers interpret these findings in designing their websites?   |
| <b>Student interests</b> | <b>Physiotherapy: Recovering from injury</b>  |
| Field of psychology      | Learning  |
| Topic                    | Learning physical skills  |
| Research question        | To what extent does immediate feedback, employing digitized moving images of the self, help in the learning process in developing a physical skill?   |
| Approach                 | The focus is on re-educating the leg muscles of a patient learning to walk again while recovering from a chronic leg injury. By focusing on one of these examples or similar physical actions, the student may consider the advantages of digitized software that allows the patient to have immediate feedback on their movement. On a split screen, this action can be compared to that of a perfect model. The movement can also be compared in a similar way with “stickmen” images on a four-way split screen. The student might consider how this learning method compares to traditional coaching or training, and consider ethical implications. The methodologies used to interpret the efficacy of each learning strategy could be evaluated. |

The choice of topic is crucial for achieving a high mark for the extended essay. Choosing the topic needs a period of thoughtful reflection where consideration is given, even at this early stage, to the potential argument, analysis and evaluation that may develop over the course of writing the essay. Topics that do not lend themselves well to analysis, evaluation or debate are unlikely to be the best choices for a student.

### Treatment of the topic

Students submitting extended essays in psychology must be fully aware that the discipline has its own unique terms, methods, ethical standards and evaluative commentary. Students should not attempt to prepare an extended essay in psychology if they have not studied the subject formally. The type of knowledge and analytical skills required for a psychology extended essay are best developed through direct learning experiences derived from the Diploma Programme psychology course. Schools where psychology is not taught must be aware that

students who submit extended essays in psychology with no formal exposure to the subject risk earning very low marks.

Specific reference to relevant psychology concepts, theories and studies must be integrated throughout each extended essay; these form the basis for the development of an argument in response to the research question. Essays that take a common sense or anecdotal approach will not earn high marks. Students should incorporate relevant psychological research, and demonstrate critical awareness and understanding of the material. Analysis should go beyond description or recitation of published material and include original analysis by the student.

An important skill that is developed throughout the psychology course is that of evaluative commentary and argument. One of the aims of all group 3 subjects is that students develop an understanding of the contestable nature of the content, as well as a toleration of uncertainty, that often comes from studying the behaviour of individuals and societies. Extended essays submitted in psychology should also demonstrate such understanding. Research and claims should be carefully evaluated to develop a well-rounded understanding of the topic being investigated. When students make assertions in their extended essays, these should always be supported by evidence that is drawn from psychological theories or studies. The current *Psychology guide* includes a framework for evaluation that trains students to address cultural, ethical, gender or methodological considerations that may affect the interpretation of behaviour resulting from a particular study or theory. Comparative analysis might also be an evaluative strategy relevant for inclusion in an extended essay. Students should keep these considerations in mind when selecting a topic, defining a research question and developing an argument.

The IB has published a set of ethical guidelines for the internal assessment component of the psychology course. While the requirements of a psychology extended essay are very different from those of the internal assessment, the ethical guidelines also apply to this project. Students and supervisors share the responsibility of ensuring that the extended essay does not breach established ethical guidelines. Many topics within psychology are sensitive and personal in nature, and careful consideration should be given to all possible ethical issues before students embark on the process of developing their essay.

Frequent reference to the assessment criteria by both the supervisor and the student will help keep a sharper focus on the essay.

## Interpreting the assessment criteria

### **Criterion A: research question**

The research question may be written in the form of a question, proposition or statement. It should be focused on a topic that is clearly relevant to psychology, deals with behaviour and is able to be addressed consistently throughout the extended essay.

### **Criterion B: introduction**

This section should place the research question in the context of existing knowledge and understanding of the topic. The student's personal experience or views should not appear in this section. Previous psychological studies that can be related to the research question should be considered. The studies that are introduced here may be generally supportive but they are unlikely to answer the research question in an entirely satisfactory manner. It is part of the student's task to identify strengths, weaknesses and omissions of past work, and to show how his or her essay could help to resolve some of the problems that have been identified.

### **Criterion C: investigation**

There is a wide range of resources available for questions that are likely to be raised in extended essays related to psychology. These include textbooks, academic journals, films, television, radio, newspapers and internet-based

sources. Film, television, radio, newspapers and internet-based sources should be treated with considerable caution since the material they contain may be neither accurate nor valid. The essay should present findings and theories from these sources in an evaluative context and students should not necessarily accept their findings at face value. A healthy and informed scepticism should be maintained towards material from film, television, radio, newspapers and internet-based sources, until authoritative judgment allows their findings or theories to become accepted. Although the argument presented in the essay may be supported by the student's own observations, the presentation or analysis of such material should be used for illustrative purposes only and should form no more than a very minor part of the evidence used.

**Criterion D: knowledge and understanding of the topic studied**

Evidence and findings from empirical studies and their related theories should be an integral part of extended essays for psychology. Such material may refer to human or non-human animals and their associated behaviours. Where appropriate, students should draw on cultural, ethical, gender and methodological considerations; they should show how these aspects may affect the interpretation of the research question that is the focus of the essay.

**Criterion E: reasoned argument**

The research question should be the central focus of the argument as it is developed throughout the essay. As the argument is constructed, it often creates conflict between varying theories and findings from studies. The student should explain and analyse these different views and marshal those essential points that support the argument that is being advanced. It is the task of the student to persuade the reader of the reasons for, and validity of, his or her view. This is best accomplished by using a logical approach where successive salient points are built up, one upon the other.

**Criterion F: application of analytical and evaluative skills appropriate to the subject**

Demanding cognitive effort is needed to apply analytical and evaluative factors created by the student. The analysis and evaluation need to be covered in depth since these will lead to the crux of the argument. There is also an opportunity for the student to use reflexivity—a consideration of his or her own experiences and views that have contributed to the methods used in the investigation and the interpretation of points that have arisen.

**Criterion G: use of language appropriate to the subject**

Psychology is a subject that uses its terminology in a specific manner and students are expected to show this in their essays. Students who have not studied psychology as a specific part of an academic course are strongly urged to become thoroughly acquainted with the language used by psychologists and how it is applied within the discipline.

**Criterion H: conclusion**

The conclusion is a synthesis of the argument that has preceded it. It is the end point of a logical process that has been established by employing a succession of psychological studies and theories to justify the case that has been presented.

**Criterion I: formal presentation**

This criterion relates to the extent to which the essay conforms to academic standards about the way in which research papers should be presented. The presentation of essays that omit a bibliography or that do not give references for quotations is deemed unacceptable (level 0). Essays that omit one of the required elements—title page, table of contents, page numbers—are deemed no better than satisfactory (maximum level 2), while essays that omit two of them are deemed poor at best (maximum level 1).

**Criterion J: abstract**

The abstract is judged on the clarity with which it presents an overview of the research and the essay, not on the quality of the research question itself, nor on the quality of argument or the conclusions.

### **Criterion K: holistic judgment**

Qualities that are rewarded under this criterion include intellectual initiative, insight, and breadth and depth of understanding. Ways of demonstrating such qualities include:

- choice of a relevant research question that extends the student’s thinking but is also feasible within the time available
- location and judicious use of resources
- analysis and evaluation of psychological material to produce salient points for the argument
- use of a reflexive approach that involves the views and imagination of the student to make a unique contribution to understanding the topic.

## **Social and cultural anthropology**

These subject guidelines should be read in conjunction with the “Introduction”, “Outline” and “Details—all essays” sections of this guide.

### **Overview**

An extended essay in social and cultural anthropology provides students with an opportunity to develop an awareness of what constitutes a distinctively anthropological approach to the organization of human life in society and culture. Extended essays should be based on published ethnographic research. Students are expected to demonstrate, in the presentation of the research, their knowledge and understanding of the methods and aims of social and cultural anthropology.

### **Choice of topic**

Social and cultural anthropology is not a “residual” category for essays that do not fit into any other extended essay subject. Students must choose topics that lend themselves to anthropological investigation, and must carefully consider their choice of topic in terms of the assessment criteria.

An extended essay in social and cultural anthropology should analyse a topic from a theoretical or comparative perspective, based on the student’s own original analysis and on a solid understanding of the theoretical issues concerned. Students who intend to tackle comparative projects must be aware that research strategies involving two or more societies may call for greater narrowing of the research focus than a study in a single society. For example, a comparative analysis of Mexican and US views of death cannot be conducted successfully in the context of an extended essay because the topic is too broad. The research would have to be narrowed down by focusing, for example, on specific sub-groups of each society, as well as on a few well-chosen contrasting points, from which the student would identify underlying patterns and causes.

Extended essays that address issues in subfields of anthropology other than sociocultural anthropology, such as archeology, primatology or the study of human evolution, are not appropriate. Extended essays in linguistic anthropology are acceptable, provided that they demonstrate the student’s ability to analyse language in its sociocultural context. Students interested in conducting a research project in linguistic anthropology should be warned that such research frequently presumes a background in both sociocultural anthropology and linguistics.

Extended essays that seek to find solutions to social problems in an abstract fashion, that consist of polemic arguments for a particular position, or that present value judgments, are not appropriate. For example, the research question “Abortion: can one make a decision concerning the life of another human being?” cannot be analysed from the perspective of social and cultural anthropology.

Students must be aware that an emotional or experiential commitment to a particular issue can blunt their analysis of the topic. Personal commitment must be reinforced with intellectual and academic work, including explicit reference to what anthropologists have had to say about an issue. For instance, anthropologists have written a great deal about the role of women in Islam, so an essay that addresses the issue from a theological interpretation of sacred texts, or from journalistic accounts, will be marked down unless it frames the discussion within the context of anthropological research on religion and/or gender in specific societies.

The title of the extended essay must indicate a specific focus and problem, usually with reference to a specific group. Essay titles that are too general almost inevitably lead to a discussion that is inappropriately descriptive and superficial. In contrast, more tightly focused essay titles encourage clear expositions of ethnographic research conducted among specific groups, with an attention to theoretical implications.

The following examples of titles for social and cultural anthropology extended essays are intended as guidance only. The pairings illustrate that focused topics (indicated by the first title) should be encouraged rather than broad topics (indicated by the second title).

- “The Sioux sweat lodge: ethnic revival and New Age appropriations” **is better than** “Native American culture”.
- “Transnationalism and the labour market: South Asian workers in the Kuwaiti service industry” **is better than** “South Asians in the Middle East”.
- “Youth subculture, style and teenage rebellion: the politics of skateboarding in a French working-class suburb” **is better than** “Skateboarding as a hobby”.

Moreover, it may help if the student further defines the topic chosen for study in the form of a research question, followed by a statement of intent that indicates which broad process is going to be used in answering the question. In this way, the approach to the topic chosen may be even further clarified. Some examples of this could be as follows.

|                   |  |
|-------------------|--|
| <b>Topic</b>      | <b>A comparative analysis of the Inupiat and Gwich'in indigenous peoples of Alaska and their contrasting attitudes towards drilling in the Alaskan National Wildlife Refuge</b>  |
| Research question | What are the cultural, economic and political factors that explain why one indigenous group supports drilling while another opposes it?  |
| Approach          | A comparison is made using published primary and secondary data to assess the claims and counterclaims made by the two indigenous groups. The study not only analyses what is stated by the indigenous peoples, but also assesses their statements in relation to their differing levels of acculturation and modernization.   |
| <b>Topic</b>      | <b>Agency and structure: how women are heard through the veil in Lila Abu-Lughod's <i>Veiled Sentiments</i> and William C Young's <i>The Rashaayda Bedouin</i></b>   |
| Research question | Do the theoretical concepts of agency and structure suffice to explain veiling among Muslim women in the two chosen ethnographies?   |
| Approach          | A comparison is made of two ethnographies dealing with the veiling of women. The comparison is theoretically developed by applying the concepts of structure and agency to understand the functions of veiling. The argument is then further refined with a counter to the structure and agency approach to veiling by applying a feminist approach to the understanding of veiling as revealed in the chosen ethnographies. |



## Treatment of the topic

Students must clearly understand that social and cultural anthropology is a discipline with its own goals, methods and ways of posing questions, and that common sense is no substitute for a background in the subject. Students must make explicit reference to anthropological concepts and theory, and to their application in the investigation. Students should not attempt to prepare an extended essay in social and cultural anthropology if they have not studied the subject formally. Reading a textbook or consulting an encyclopedia while writing the extended essay will not compensate for a lack of background knowledge in the subject. Schools where social and cultural anthropology is not taught must be aware that students who submit extended essays in social and cultural anthropology with no formal exposure to the subject risk earning very low marks.

The presentation of anthropological materials must:

- go beyond a superficial description to analyse underlying patterns and causes—it must not merely summarize others' research findings
- analyse all selected ethnographic data in their social, cultural, political and historical contexts
- demonstrate a recognition of the methodological problems involved in the collection, evaluation and presentation of ethnographic data
- make explicit reference to the ethical issues appropriate to the investigation.

Frequent reference to the assessment criteria by both the supervisor and the student will help keep a sharper focus on the project.

## Interpreting the assessment criteria

### Criterion A: research question

The research question must be appropriate to the particular subject in which the essay is submitted. In social and cultural anthropology, this means that it must focus on a question that can be analysed using the theoretical underpinnings, analytical tools and methods of the discipline.

Although the aim of the essay can best be defined in the form of a question, it may also be presented as a statement or proposition for discussion.

### Criterion B: introduction

The introduction should relate the research question to existing subject knowledge: the student's personal experience or particular opinion is rarely relevant here.

### Criterion C: investigation

The investigation may focus on ethnographic materials selected by the student and placed in a comparative and theoretical context. Students may choose to analyse a topic from a theoretical or comparative perspective, drawing on published sources, both primary and secondary. Whatever the focus of the investigation, the student must provide an explicit description of the ethnographic context of the data. This should include a specific description of the group studied, location, time, social and political context, and the social and political positions of persons as revealed through their ethnographic accounts. The essay must place all data in a critical context that will demonstrate awareness of their relationship to other data that could have been gathered in the same context, and of the extent to which the observer's position helped to shape the data. Students are expected to demonstrate an understanding of the local–global dynamics relevant to the ethnographic material they analyse, and of the ethical dimensions of ethnographic fieldwork.

### **Criterion D: knowledge and understanding of the topic studied**

The essay should integrate into the discussion clear and explicit evidence of specific and relevant anthropological reading. It should demonstrate a sound knowledge of anthropological concepts and theory relevant to the research question that is applied to the materials with a critical perspective. The essay should explicitly discuss methodological issues related to the collection, analysis and presentation of the ethnographic data.

### **Criterion E: reasoned argument**

Students should be aware of the need to give their essays the backbone of a developing argument. Personal views should not simply be stated but need to be supported by reasoned argument to persuade the reader of their validity. Straightforward descriptive or narrative accounts that lack analysis do not usually advance an argument and should be avoided.

### **Criterion F: application of analytical and evaluative skills appropriate to the subject**

The student should move beyond mere description, and offer anthropologically sound generalizations and explanations for the data. The essay should include a clear discussion of underlying patterns and causes of an anthropological nature, and of their relationship to the data.

### **Criterion G: use of language appropriate to the subject**

Students should be aware of terminology specific to the discipline and be able to use this effectively. The knowledge that some terms are contested or may change their meaning over time should be incorporated into the essay where relevant.

### **Criterion H: conclusion**

“Consistent” is the key word here: the conclusion should develop out of the argument and not introduce new or extraneous matter. It should not repeat the material of the introduction; rather, it should present a new synthesis in light of the discussion.

### **Criterion I: formal presentation**

This criterion relates to the extent to which the essay conforms to academic standards about the way in which research papers should be presented. The presentation of essays that omit a bibliography or that do not give references for quotations is deemed unacceptable (level 0). Essays that omit one of the required elements—title page, table of contents, page numbers—are deemed no better than satisfactory (maximum level 2), while essays that omit two of them are deemed poor at best (maximum level 1).

Students must provide a section and sub-section structure to their essays, with appropriate informative headings. Tables and charts should appear in the body of the essay, as close as possible to their first reference. Any material that is not original must be carefully acknowledged, with specific attention paid to the acknowledgment and referencing of quotes.

### **Criterion J: abstract**

The abstract is judged on the clarity with which it presents an overview of the research and the essay, not on the quality of the research question itself, nor on the quality of the argument or the conclusions.

### **Criterion K: holistic judgment**

Qualities that are rewarded under this criterion include intellectual initiative, insight and depth of understanding. Ways of demonstrating intellectual initiative in social and cultural anthropology include:

- judiciously choosing an appropriate topic and research question
- locating relevant resources
- devising an ethnographic, topic-based comparative or theoretical research project that demonstrates the rich possibilities of anthropological methods

- applying anthropological imagination to the analysis of the ethnographic material
- providing a layered account of the data that takes into consideration its social, political, economic, cultural, national and transnational dimensions
- approaching the research in a reflexive manner that identifies its strengths, shortcomings and ethical dimensions.

## Sports, exercise and health science

These subject guidelines should be read in conjunction with the “Introduction”, “Outline” and “Details—all essays” sections of this guide.

### Overview

An extended essay in sports, exercise and health science (SEHS) provides students with an opportunity to apply a wide range of skills while researching a topic of personal interest in the field of SEHS. The nature of an extended essay in SEHS is characterized by a specific focus that investigates an aspect of the relevant subject matter within the general context of a scientific investigation.

### Choice of topic

It is important that the extended essay has a clear SEHS emphasis and is not more closely related to another subject. While SEHS incorporates knowledge from a variety of different fields, in particular biology, chemistry, physics and psychology, the extended essay must have a strong emphasis on human health and performance in relation to sports and exercise. The topic chosen must allow for an approach that distinctly relates to an analysis of the development of human performance in sports or exercise or an understanding of the role of exercise or nutrition in improving or maintaining health and managing disease.

Though essays that deal with the physiological responses to exercise may prove a particular case in point, emphasis should be placed on the application and relationship between the exercise and relevant bodily responses and should not be applied to the biological structure of the anatomy. Similarly, when choosing a topic that has psychological content, the extended essay should focus on sports, health or exercise components and their application in that field and not on the broader implications of clinical or medical treatment.

Some topics may be unsuitable for investigation because of ethical or safety issues. The extended essay investigation must comply with the IB animal experimentation policy. Experiments in which the student is likely to inflict pain on, or cause undue stress to subjects or compromise their health are not appropriate. An experiment involving human subjects must be with their or their guardian’s written permission. It is recommended that all test subjects complete a Physical Activity Readiness Questionnaire (PAR-Q) or similar readiness questionnaire prior to partaking in rigorous exercise to ensure that they are suitable candidates for the investigation. Experiments involving body fluids must not be performed due to the risk of the transmission of blood-borne pathogens. Studies that require access to, or publication of, confidential medical information are also not appropriate.

Other topics may be unsuitable because the outcome is already well known and documented in standard textbooks.

The following examples of titles for SEHS extended essays are intended for guidance only. The pairings illustrate that focused topics (indicated by the first title) should be encouraged rather than broad topics (indicated by the second title).

- “The effect of energy drinks on recovery times in middle-distance runners” **is better than** “Energy drinks and exercise”.
- “A study into the effect of pre-performance routines on basketball free throws” **is better than** “How can one enhance the performance of an athlete by using different techniques of psychology?”
- “A study into the effect of fluid intake on thermoregulation in female high school soccer players” **is better than** “Thermoregulation in soccer players”.
- “A study into the most effective angle of release for javelin throwing” **is better than** “The mechanics of throwing”.
- “A study into the correlation between the body fat readings obtained by using callipers and a bioelectric impedance monitor” **is better than** “Body composition of athletes”.

The topic chosen for study should be presented in the form of a research question, followed by a statement of intent outlining the research approach to be used in answering the question. In this way, the approach to the topic chosen may be even further clarified. Some examples of this could be the following:

|                   |  |
|-------------------|--|
| <b>Topic</b>      | <b>Personality types and sport</b>   |
| Research question | Is there a specific personality type more suited to contact sports?  |
| Approach          | A group of 50 rugby players is asked to complete Cattell’s <i>16 Personality Factors Questionnaire</i> . An analysis of the results and comparison to published data are carried out to determine whether a specific personality type (according to Weiner’s model) is suited to contact sports.   |
| <b>Topic</b>      | <b>The effectiveness of plyometric training</b>  |
| Research question | Will a short-term, eight-hour plyometric training programme have a beneficial effect on the explosive ability of volleyball players?   |
| Approach          | Using a digital jump mat, measure the pre- and post-test standing high jump of 10 high school volleyball players. In order to measure this five of these volleyball players carry out a short-term high-intensity plyometric training programme; the remaining five players carry out a short term training programme that does not include plyometric training. The pre-and post-test data from both groups is compared.                          |
| <b>Topic</b>      | <b>Humidity and training</b>   |
| Research question | Can a training programme in high humidity have an impact on the fitness of a road cyclist?   |
| Approach          | Using a digital heart-rate monitor, pre- and post-exercise heart rates and recovery times are measured for five road cyclists. The cyclists’ heart rates and recovery times are measured. These cyclists then carry out a programme of training in 90% plus humidity and 30°C plus temperature, after which heart rate and recovery time data is once again collected. The pre- and post-training data is analysed and compared to published data. |

|                   |  |
|-------------------|--|
| <b>Topic</b>      | <b>Skill transfer</b>  |
| Research question | What is the effectiveness of bilateral transfer training on skill development in basketball players aged 11–12?  |
| Approach          | Two small groups of basketball players are asked to complete six training sessions. One group will practice with their dominant hand only, the other using a bilateral approach to training. Both groups are then tested in a skills circuit to determine if teaching bilateral skills at an early age has any benefit.  |
| <b>Topic</b>      | <b>Warm-up and performance</b>   |
| Research question | What effect does an athlete's pre-event warm-up have on the performance of a 100m swimmer?   |
| Approach          | A small group of competitive swimmers is asked to complete a series of 100m distances over a number of different days in a pool after undergoing a variety of pre-event warm-ups. The warm-ups would consist of a control where the subjects have no warm-up; an aerobic/skill component followed by static stretching; an aerobic/skill component followed by dynamic stretching; just an aerobic/skill component; just static stretching; just dynamic stretching. Data across the conditions is then analysed and compared. |
| <b>Topic</b>      | <b>Rebound qualities of different surfaces</b>   |
| Research question | How does the court surface affect the rebound of a ball that has top-spin and back-spin?   |
| Approach          | A ball machine is used to project a number of tennis balls onto three different types of surface at a speed of 40 mph with either top-spin or back-spin. The three surfaces are plexi-cushion, rebound ace and synthetic grass. Video evidence is captured of the nature of the rebound from the side looking for height of rebound and distance of bounce. An analysis of the rebound data for the different conditions is carried out and a comparison is made of the surfaces at this speed.                                |
| <b>Topic</b>      | <b>Skill learning</b>  |
| Research question | Which methods of practice, both mental and physical, have the most impact on learning to hit a golf ball?  |
| Approach          | Three groups of beginner golfers are asked to take part in training sessions where they are practising a putt in golf either physically, mentally or both physically and mentally. All groups are then tested in a putting skills circuit to determine which mode of practice has the most benefit.  |

## Treatment of the topic

Students should point out early in the essay how the research question was arrived at and, if appropriate, how it was narrowed down by briefly outlining related aspects that are not being considered in the essay. Students should be encouraged to formulate one or more hypotheses based on the research question. A single, well-formulated question may give rise to a small number of precise hypotheses.

Essays in SEHS may be based on data collected by the student through experimentation in the laboratory, in the field, through questionnaires or some other appropriate SEHS approach. Alternatively, essays may be based on data or information obtained from literature, ideally from primary sources, and manipulated or analysed in an original way by the student. This data can also be used in conjunction with data collected by the student. Essays that simply restate facts or data taken directly from the sources are of little value. Whichever approach is chosen, the student must ensure that sufficient resources, in the form of data and information, can be obtained in order to allow the topic to be effectively researched.

Essays that involve practical work carried out either in the laboratory, or in the field, should include a clear and concise description of the experimental procedure. Students should attempt to specify how the hypothesis and methodology were decided and show any approaches that were considered and rejected. Ideally, students should carry out the research for the essay under the direction of a school supervisor. Where this is not practical, for instance in testing multiple subjects in the field over a long period of time, every effort should be made to keep accurate documentation of the testing procedures. It is possible to complete a good essay using equipment carried by most schools, and this approach is to be encouraged. Regardless of where, or under what circumstances, the research is carried out, students must provide evidence in the essay of their personal contribution to the research approach and to the selection of the methods used. Essays based on research carried out by the student at a research institute, university or club, under the guidance of an external supervisor, must be accompanied by a covering letter outlining the nature and level of guidance provided.

Generating and presenting data should not be an end in itself; analysis using appropriate scientific techniques is essential. The main body of the essay should consist of an argument or evaluation based on the data or information presented. Here, the student should point out the significance of any graphs, tables or diagrams. Since this is often the longest single section of the essay, it is essential that it is well structured and has an obvious logical progression. A clear structure can be imposed on this section by dividing it into numbered and headed paragraphs. This evaluation should show an understanding of the results and an appreciation of their significance in light of the literature that has been consulted.

Where a sports psychology-based topic is chosen it is important to leave room for discussion of conflicting evidence where appropriate. The ability to analyse from different perspectives is very important in this type of essay. It is not always appropriate to include graphs and tables for analysis, but every effort should be made to provide clear pathways as to the outcome of any experimentation.

Students should provide some explanation of anomalies or unexpected outcomes, but this should not form a major part of the discussion. If necessary, modifications to hypotheses presented earlier in the essay should be proposed and a research approach for testing these should be suggested. Some assessment of the outcomes of the research in a future or wider context should be made.

Students are encouraged to undertake a critical evaluation of the work they have done. In this analysis, the student should describe and explain the limitations imposed on the research by factors such as the suitability and reliability of the sources accessed, accuracy and precision of measuring equipment, sample size, validity and reliability of statistics. When testing in the field via physical experimentation or questionnaires, limitations should be considered, such as those arising from the problem of repeatability and control when using human subjects, as well as the difficulties of generalizing from research based on small group samples or elements that are difficult to control such as weather conditions, prior health of the subjects or effort applied during testing.

## Interpreting the assessment criteria

### Criterion A: Research question

In an SEHS extended essay, the research question is best stated in the form of a question. The research question should not be understood as a statement of the topic but rather as a precisely formulated question that the research will attempt to answer. For example, a statement of the topic of an essay might be “Factors that affect

performance”; the research question based on this topic could be “What are the possible effects of high intensity training programmes on field hockey players?” The research question can then be used to formulate a hypothesis, or hypotheses, which can be tested. The research question should be identified clearly and set out prominently in the introduction. A broad statement of the topic of the essay or a statement of the hypothesis is **not sufficient** on its own to meet the requirement for a research question in an SEHS extended essay.

### **Criterion B: Introduction**

The purpose of the introduction is to set the research question into context. Some research questions may require some background from other disciplines. However, care should be taken when including information from other disciplines as the essay will only be judged on its SEHS content. For example, a student completing an extended essay on “diabetes and physical activity” must apply their knowledge through the physical activity field and not apply knowledge to the general well-being or medical aspects of diabetes.

### **Criterion C: Investigation**

The way in which the investigation is written will depend very much on whether or not the essay is based on experimental work performed by the student. For essays that are based on data taken from written sources, the student should explain clearly how the data has been selected and should comment on its reliability. For experimental work, sufficient information on the methodology should be provided to allow the work to be repeated. Students should demonstrate that they understand the theory behind any techniques or equipment used. They are also expected to show an awareness of any limitations or uncertainties inherent in their techniques and equipment. This can be helped by the use of recognized standardized tests.

### **Criterion D: Knowledge and understanding of the topic studied**

An SEHS extended essay should be based on specific, relevant and clearly defined aspects of sports, exercise, health or a combination of those sciences. The information and ideas should be presented in a way that provides evidence that these have been understood and applied correctly. Material extracted from the sources should be referenced and incorporated into the main body of the essay in a way that demonstrates an understanding of the subject.

### **Criterion E: Reasoned argument**

Students writing an SEHS extended essay must maintain a reasoned, logical argument that focuses on the research question. Essays that attempt to deal with a large number of variables are unlikely to be focused and coherent. A clear and logical argument can be achieved by making repeated reference to the research question and to the hypotheses derived from it. An assessment of the extent to which the hypotheses are supported, or the question is answered, by the data or information accessed should form part of the argument.

### **Criterion F: Application of analytical and evaluative skills appropriate to the subject**

The stated conclusion(s) must be based on the data, information and/or evidence presented in the essay. The data must be analysed and presented in such a way that the argument leading to the conclusion is supported and clarified. Tables of raw data will generally not achieve this on their own. Raw data must be analysed, processed and presented in a way that relates clearly and directly to the central argument of the essay. Where appropriate, this analysis should allow for an assessment of the validity of the hypothesis. Errors and uncertainties arising from the methodology, instruments and/or techniques should be analysed and critically evaluated.

### **Criterion G: Use of language appropriate to the subject**

Students writing in SEHS need to show a mastery of, and fluency in, the use of appropriate terminology. At the same time, students need to avoid excessive use of jargon. Any technical terms that are used should be explained and the student must demonstrate an understanding of these terms by using them appropriately within the text. The student must try to maintain a consistent linguistic style throughout the essay.

### **Criterion H: Conclusion**

The conclusion should relate directly to the research question and should point out the main findings of the research. Field research in SEHS can prove difficult to adequately control and may reveal unexpected outcomes. These should be pointed out, even if they were not part of the original plan. The original research question may not be fully answered by the investigation. In these cases, the student should point out unresolved issues and make suggestions as to how these might be further investigated.

### **Criterion I: Formal presentation**

This criterion relates to the extent to which the essay conforms to current academic standards regarding the way in which research papers should be presented. The presentation of essays that omit a bibliography or that do not give references for quotations is deemed unacceptable (level 0). Essays that omit one of the required elements—title page, table of contents, page numbers—are deemed no better than satisfactory (maximum level 2), while essays that omit two of the required elements are deemed poor at best (maximum level 1). Additionally, if diagrams are poorly presented or if the information shown on the diagram is unclear, one mark should be deducted.

Sports, exercise and health investigations often require the support of referenced material, not only in the form of text or data, but also as diagrams or drawings. Care must be taken to supply references for illustrations taken from sources. Students must avoid the temptation to supply illustrations for their own sake. Illustrative material should only be included if it enhances the argument or supplies information that cannot be easily provided in another way. Original photographs, photocopies or downloaded images that are not labelled or put into the context of the investigation are unlikely to enhance the essay.

Sports, exercise and health investigations often result in large quantities of raw data. Large tables of raw data are best included in an appendix. Processed data that is central to the argument of the essay should be included in the body of the essay and be placed as close as possible to its first reference.

### **Criterion J: Abstract**

The abstract is judged on the clarity with which it states the research question, explains how the investigation was carried out and summarizes the conclusion. However, the quality of the research question or the conclusion is not judged here. If the student clearly states the question (even if it is poor) and includes the other two required elements, then the abstract can still receive full marks.

For a sports, exercise and health investigation, the abstract must include the research question and a conclusion that directly relates to the research question. In addition, the description of how the research was conducted must include a description of the methodology and the scope of the study.

### **Criterion K: Holistic judgment**

Qualities that are rewarded under this criterion include the following.

- Intellectual initiative: Ways of demonstrating this in SEHS essays include the choice of topic and research question, and the use of novel or innovative approaches to address the research question.
- Insight and depth of understanding: These qualities are most likely to be demonstrated as a consequence of detailed research and thorough reflection, and by well-informed and reasoned arguments that consistently and effectively addresses the research question.
- Originality and creativity: These qualities will be apparent by clear evidence of a personal approach backed up by solid research and reasoning.



# Theatre

These subject guidelines should be read in conjunction with the “Introduction”, “Outline” and “Details—all essays” sections of this guide.

## Overview

An extended essay in theatre provides students with an opportunity to undertake independent research into a topic of their choice, to apply a range of skills in order to develop and explore a focused research question appropriate to theatre in an imaginative and critical way, and to test and validate their research by considering its effect on the practice of the investigated theatre form.

## Choice of topic

Owing to the composite nature of theatre, students may choose to take an interdisciplinary approach in their research. Whatever approach they choose, it is important to frame an appropriately focused research question. It is the task of the supervisor to ensure that the research question leads the student along a path that uses appropriate theatrical sources and that encourages the application of relevant theatrical concepts, theories or ideas. The essay topic may relate to an area of the Diploma Programme theatre course, but this is not a requirement and other areas of the subject may be explored. It is important that the topic reflects the student’s particular interest and enthusiasm within the subject area.

The scope of the essay should not be too broad as such essays are rarely successful. The best research questions are well focused, thus encouraging analysis in depth rather than breadth. It is also important that the theatrical context of the essay is clearly established early in the essay. The title of the essay should clearly indicate the essay’s main aims and objectives. It is not always a requirement for extended essays in theatre to deal with applied research that is practicable in nature. However, even if the student chooses to explore a purely theoretical topic, a connection between theory and its application in practice should be clearly noted. The least successful essays are generally those in which theory is completely divorced from practice; a narrow literary approach must be avoided. For example, if the student chooses to explore the use of fans in Restoration comedy, the wider cultural context informing the historical and social meanings behind this convention should be illustrated by a discussion of how it is applied in a production of a chosen Restoration play. Absolute reliance on textbooks and websites is discouraged and no extended essay in theatre should be based exclusively on either. Both these types of source should be consulted in conjunction with other relevant research material as support material for the student’s own original research. Essays based on original research require a more personal involvement, which, in turn, encourages a more in-depth study.

A sound methodology, including a bibliography of high-quality research sources, is the foundation of a good extended essay in theatre. Good sources give the student scope for the type of in-depth analysis that characterizes the best pieces of work. Essays based entirely on published textbooks rarely score highly.

Comparisons between two or more theatrical practices are permissible, but students should be careful to ensure that the comparisons are valid and are a product of sensitive and objective analysis.

The following give some indication of the possible range of titles, research questions and approaches.

|                   |   |
|-------------------|---|
| <b>Title</b>      | <b>An investigation into the functions of mask in two of Zeami Motokiyo's plays</b>   |
| Research question | What are the main uses and types of mask in Noh drama, and how does the mask contribute to the creation of a character in Noh?  |
| Approach          | Relevant research materials are collected on the history, acting styles and stage conventions of Noh, and on the types of mask and their uses. The use of mask in two of Zeami Motokiyo's plays and the significance of mask for character development in these plays is analysed, and the uses of mask in the two plays are compared and contrasted.   |
| <b>Title</b>      | <b>Female stereotypes and their performance in a selection of Brecht's plays</b>  |
| Research question | What female stereotypes did Brecht employ in his plays, and how can these be compared and contrasted in performance, based on an analysis of a selection of Brecht's plays?   |
| Approach          | Relevant research materials are collected on the types and nature of female stereotypes Brecht used in his plays. These stereotypes are explored in relation to the chosen plays' themes and context, and are compared and contrasted by examining how they may have worked in production. The possible changes in the fundamental nature and working of these plays if the use of female roles were changed are explored.  |
| <b>Title</b>      | <b>An examination of Soyinka's use of rhythm in acting, based on an in-depth exploration of one Soyinka play</b>  |
| Research question | How did Soyinka use language rhythms in his plays and how may these rhythms be applied in production?   |
| Approach          | Relevant research materials are collected on Soyinka's use of language in playwriting. The language rhythms used in Soyinka's plays are analysed in-depth by investigating the characters' use of language rhythms in one Soyinka play. The way these rhythms can change/contribute to the play's meanings, character development and relationships between different characters in the chosen play is examined.  |
| <b>Title</b>      | <b>A study of the effects of the use of fabrics and lighting in <i>The Tempest</i></b>  |
| Research question | How can fabrics and lighting contribute to the creation of magical effects in a production of Shakespeare's last play?  |
| Approach          | In-depth research is carried out into the use of fabrics (in furnishing and costuming) and lighting in previous productions of <i>The Tempest</i> . There is a discussion, based on these examples, of how fabrics and lighting work with other production elements, how they can contribute to the creation of magical effects and how these affect the readings of the play. The way that appropriate/ inappropriate use of both can affect a production is examined. |

## Treatment of the topic

When the research question has been established, the student should make a research plan. The research plan should be flexible enough to allow the student to explore the topic in a creative manner. The student should not be afraid to take risks throughout the research process: originality is encouraged, as is the employment of a number of different research models.

The emphasis of the extended essay should always be on written analysis, interpretation, evaluation, and the construction and development of a sound argument. It is vital that the methodology of the essay is tailored to the research question and allows for an in-depth exploration.

Appropriate resources for an extended essay in theatre must include primary and secondary data, such as books, newspapers and magazines, interviews, and internet websites. The use of other materials such as sketches, drawings, pictures, plans, photographs, CDs and DVDs is encouraged, but should not overwhelm the extended essay to the detriment of the research discourse. Where they are used, they need to be appropriate to the development and support of the argument. The sources of any such materials that are not original must be properly acknowledged.

The personal involvement of the student in the extended essay is of paramount importance and this can become evident through the research path that is followed. The use of active primary source material (that is, play texts and productions) is encouraged, as well as secondary source material. The research outcome should always include a link with a practical dimension.

## Interpreting the assessment criteria

### Criterion A: research question

The research question must be focused, appropriate to theatre, give the essay an appropriate context and encourage an investigative approach. It may be presented in the form of a question or as a statement or proposition for discussion. It must be specific and:

- appropriate to the particular aspect and/or area of theatre being explored
- centred on theatre and not on peripheral issues
- stated clearly early in the essay.

### Criterion B: introduction

It is important to place the research question in an appropriate historical, sociocultural and theoretical context. A clear indication should be given of the reasons why the particular topic was chosen and how it will be approached. The introduction should be clear and concise, and it should outline the topic, the scope and the methodology. It should also demonstrate how the topic relates to current theatrical knowledge and theory. Over-lengthy discourses should be avoided: the introduction should not be seen as an opportunity for the student to present personal opinions. Such opinions, and arguments for them, belong in the essay itself.

### Criterion C: investigation

It is important that the investigation uses a range of sources of information, such as those listed in the “Treatment of the topic” section. Where relevant and possible, students may wish to consult theatre practitioners such as performers, directors, researchers, writers, craftspeople or critics; they may wish to visit theatres, galleries, museums or theatre companies; or they may even wish to engage with the subject on a practical level at some point in the research in order to test their hypotheses. Whatever information is selected, it must be relevant to the topic and should provide the evidence needed to support the argument.

Good planning of the investigation involves the selection of a suitable methodology, and the collection and selection of appropriate data. All sources must be clearly acknowledged.

### Criterion D: knowledge and understanding of the topic studied

Knowledge and understanding of theoretical background, and an awareness of the academic context and its practical consequences, are essential for a good essay. This should be achieved through the integration of the student's own ideas with current philosophical and theoretical thought, and their practical application in theatre. The student must demonstrate a contextual understanding of the theatre practice or tradition that is being

researched. The context should be understood as the historical and sociocultural background that may inform or shape the topic chosen by the student. The nature of the chosen topic will determine the emphasis given to the different aspects of context mentioned here and will also determine the direction of the research. Knowledge and understanding of the topic allows the student to develop a critical understanding of, and personal point of view about, the research findings, whether they come from primary or secondary sources.

**Criterion E: reasoned argument**

Students should be aware of the need to give their essays the backbone of a developing argument. Essays that are largely narrative or descriptive, or that simply state value judgments or personal observations, will not score highly on this criterion. The best essays develop an argument, backed up with evidence, to convince the reader of the validity of their findings. The argument may be personal, but at the same time must remain logical and balanced. Reasoned argument must be the fundamental structural basis for an extended essay in theatre. The accumulation of research data may form part of the preparation for the writing of the extended essay but the ability to select relevant elements from this data is a crucial skill.

Where relevant, the argument should present evidence that leads towards acceptance or rejection of the original hypotheses. In the context of the investigation of an issue, conflict or problem, bias should be avoided.

**Criterion F: application of analytical and evaluative skills appropriate to the subject**

The student should be able to analyse and evaluate the theatre work, whether this is a scene from a play, a costume design, a lighting plot or any other aspect that might be part of the chosen topic. The ability to analyse and evaluate is part of the process through which the student articulates a relationship to the work and speaks with an individual voice.

It may be that the results of the analysis are unexpected or contrary to the student's initial hypotheses. Students should not be discouraged by this. Some of the best essays have emerged when students have had to reconsider and re-evaluate their original ideas, and modify their argument accordingly. Such an awareness of the need to make constant corrections and to recognize shortcomings is an essential element of research.

**Criterion G: use of language appropriate to the subject**

Theatrical terminology must be used accurately and appropriately. Furthermore, the ability to write clearly and coherently about the chosen topic is an important skill. The inclusion of visual images may also be a crucial part of the extended essay. These images should be annotated in a detailed and specific way, as they need to have an illustrative rather than merely decorative function.

**Criterion H: conclusion**

The conclusion must not introduce any new or extraneous material, nor should it merely repeat the content of the introduction. The conclusion should synthesize the findings of the investigation and briefly reiterate the evidence relevant to the research question. It should also state, where relevant, which hypotheses have been accepted or rejected and why. The hypotheses that have been rejected may be modified or replaced, suggesting new avenues of investigation.

The conclusion should also critically evaluate the appropriateness of the methodology and acknowledge any flaws or limitations in the research process. Any unresolved questions that have arisen from the research should be mentioned at this stage.

**Criterion I: formal presentation**

This criterion relates to the extent to which the essay conforms to academic standards about the way in which research papers should be presented. The presentation of essays that omit a bibliography or that do not give references for quotations is deemed unacceptable (level 0). Essays that omit one of the required elements—title page, table of contents, page numbers—are deemed no better than satisfactory (maximum level 2), while essays that omit two of them are deemed poor at best (maximum level 1).

The essay must include a bibliography, and diagrams, photos, pictures or sketches should be attributed and suitably annotated.

### **Criterion J: abstract**

The abstract should clearly state the research question; give a brief account of how the investigation was carried out, the methods that were used and the types of information that were dealt with; and summarize the findings as stated in the conclusion.

### **Criterion K: holistic judgment**

This criterion refers to the quality of the student's response to the research question or the chosen topic. It rewards intellectual initiative in the choice of research paths, the depth of understanding demonstrated by the student in reflecting on the findings of the research, and creativity in testing and applying the research in a practical context.

## Visual arts

These subject guidelines should be read in conjunction with the "Introduction", "Outline" and "Details—all essays" sections of this guide.

### **Overview**

An extended essay in visual arts provides students with an opportunity to undertake research in an area of the visual arts of particular interest to them.

The outcome of the research should be a coherent and structured piece of writing (with appropriate illustrations) that effectively addresses a particular issue or research question, appropriate to the visual arts (broadly defined also to include architecture, design and contemporary forms of visual culture). The research may be generated or inspired by the student's direct experience of artwork, craftwork or design, or interest in the work of a particular artist, style or period. This might be related to the student's own culture or another culture. Personal contact with artists, curators and so on is strongly encouraged, as is the use of local and/or primary sources.

Absolute reliance on textbooks and the internet is discouraged and no extended essay in visual arts should be based exclusively on such sources. Textbooks should be consulted only insofar as they may stimulate original ideas, provide models of disciplined, structured and informed approaches, and encourage direct and personal involvement with the essay topic.

### **Choice of topic**

Topics that are entirely dependent on summarizing general secondary sources (such as universal art history textbooks, and encyclopedias), and topics that are likely to lead to an essay that is essentially narrative or descriptive in nature, should be avoided. Biographical studies of artists must address a relevant issue or research question and arrive at a particular, and preferably personal, conclusion. Choosing a topic that covers many aspects of art history and/or a long period of time is also unlikely to result in a successful essay. Restricting the scope of the essay will help to ensure a clear focus and will provide opportunities for demonstrating detailed understanding and critical analysis.

The following examples of titles for visual arts extended essays are intended as guidance only. The pairings illustrate that focused topics (indicated by the first title) should be encouraged rather than broad topics (indicated by the second title).

- "How did Wassily Kandinsky use colour?" **is better than** "The Bauhaus".
- "An analysis of African influences on Henry Moore" **is better than** "20th-century British sculpture".

- “What is the artistic significance of recent poles raised by the First Nations of Haida-Gwai?” **is better than** “The art of Native North American people”.
- “Klimt’s use of gold” **is better than** “Sezession in Berlin”.
- “Robert Ntila’s etching techniques: a critical investigation” **is better than** “Contemporary East African art”.

It may help if the student defines the topic chosen for study in the form of a more specific research question, followed by a statement of intent that indicates which broad process is going to be used in answering the question. In this way, the approach to the topic chosen may be even further clarified. Some examples of this could include the following.

|                   |   |
|-------------------|---|
| <b>Topic</b>      | <b>Cultural influences on Pablo Picasso’s work</b>  |
| Research question | Picasso: individual genius or cultural thief?   |
| Approach          | An investigation of the extent to which selected images in Picasso’s work may have been appropriated from other cultural sources. |
| <b>Topic</b>      | <b>The influence of Renaissance architecture in Montreal</b>  |
| Research question | Cathédrale Marie-Reine-du-Monde, Montreal: a replica of St Peter’s, Rome?   |
| Approach          | An original investigation into the stylistic similarities in the architecture of these two buildings.                             |
| <b>Topic</b>      | <b>The impact of immigration on an artist’s work</b>  |
| Research question | What is the impact of transcultural experience on the art of Gu Xiong?  |
| Approach          | An investigation into the effects of migration on a selected artist’s work.   |

## Treatment of the topic

It is essential that the topic chosen is clearly and directly related to visual arts. If the connection is only incidental, students risk introducing material that is of only marginal relevance, and will confuse the inquiry and weaken the argument. Students should be encouraged to formulate a research question of personal interest and to draw on a variety of sources to support their arguments, such as textual analysis, study of original artworks or designed artifacts, and interviews with practitioners or authorities on the subject. Students should be helped to identify and choose appropriate sources, both primary and secondary, and appropriate methods of research. Research questions that do not allow a systematic investigation that demonstrates critical artistic analysis and detailed understanding are unlikely to be suitable. In some instances, it may become clear at an early stage in the research that too few sources are available to permit such an investigation. In such cases, a change of focus should be made.

The inclusion and discussion of appropriate visual reference material is of particular importance in visual arts extended essays. Such material must, however, be directly supportive of, and relevant to, the analysis/argument. It should be neatly presented, properly acknowledged, and should appear in the body of the essay, as close as possible to the first reference.

In order to promote personal involvement in the extended essay, the use of local and/or primary sources should be encouraged wherever possible. However, it is appreciated that, in certain situations, students may not necessarily have access to primary sources. In such situations, reproductions, videos, films or photographs/internet images of a high quality are considered acceptable sources. An argument should be well substantiated, with comments and

conclusions supported by evidence that is relevant and well founded, not based simply on the student's preconceptions.

Students are expected to evaluate critically the resources consulted during the process of writing the essay by asking themselves the following questions.

- Which sources are vital to the support of my ideas, opinions and assertions?
- Which sources do not contribute to the analysis?

Many different approaches to the research question can be appropriate, for instance:

- use of primary sources (artwork and artists) and secondary sources (material **about** the visual arts) in order to establish and appraise varying interpretations
- analysing sources (primary and secondary) in order to explore and explain particular aspects of the visual arts
- using primary source material for an analysis, with emphasis on a particular aspect of visual arts
- collecting and analysing reproductions of artwork, possibly leading to a comparison of similar or different images.

Students should also demonstrate awareness of other issues surrounding the art studied.

- Do I show an awareness of the value and limitations of the art I am studying through analysing its origin and purpose?
- Do I show a consistently good artistic understanding in setting the research question into context and addressing it fully and effectively?

Relevant outcomes of this analysis should be integrated into the student's argument.

The argument should also be well substantiated:

- With what evidence do I support my comments and conclusions?
- Is this evidence relevant and well founded, and not based simply on my preconceptions?

Finally, an extended essay in visual arts is a formal essay, so students must pay very careful attention to the requirements of the assessment criteria.

Frequent reference to the assessment criteria by both the supervisor and the student will help keep a sharper focus on the project.

## Interpreting the assessment criteria

### Criterion A: research question

The research question can often be best defined in the form of a question. It may, however, also be presented as a statement or proposition for discussion. It must be:

- specific and sharply focused
- appropriate to the visual arts (broadly defined also to include architecture, design and contemporary forms of visual culture) and not of a trivial nature
- centred on the visual arts and not on peripheral issues such as biography
- stated clearly early on in the essay.

### **Criterion B: introduction**

The introduction should explain succinctly the significance of the topic, why it is worthy of investigation, and how the research question relates to existing knowledge on the topic.

The introduction should not be seen as an opportunity for padding out an essay with a lengthy account of an artist's life.

### **Criterion C: investigation**

The range of resources available will be influenced by various factors, but above all by the topic.

Students should use in the first instance primary sources (artwork, exhibitions, architecture, interviews), with secondary sources (textbooks and the comments of other artists, critics, art historians) as evidential support. It is expected that visual material (sometimes including the student's own photographs) will be included and properly referenced.

The proper planning of an essay should involve interrogating source material in light of the research question, so that the views of other art scholars and artists are used to support the student's own argument, and not as a substitute for that argument. It may thus be helpful for a student to challenge a statement by an art scholar (historian or critic), in reference to the art being studied, instead of simply agreeing with it, where there is evidence to support such a challenge.

If students make use of internet-based sources, they should do so critically and circumspectly in full awareness of their potential unreliability.

### **Criterion D: knowledge and understanding of the topic studied**

Students should demonstrate knowledge and understanding of the visual arts by discussing formal artistic aspects (for example, elements and principles of design) and considering historical, social and cultural contexts. Some of this knowledge and understanding should be based at least partially on primary sources.

### **Criterion E: reasoned argument**

Students should be aware of the need to give their essays the backbone of a developing argument in which the essay is grounded in an understanding of the relevant and wider historical and sociocultural context. Personal views should not simply be stated but need to be supported by reasoned argument, often with reference to illustrations, to persuade the reader of their validity. Straightforward descriptive or narrative accounts that lack analysis (for example, a simple recounting of an artist's life) do not usually advance an argument and should be avoided. Good essays are those that have something interesting to communicate, where there is evidence of original thought, and where students are able to substantiate their ideas and opinions.

### **Criterion F: application of analytical and evaluative skills appropriate to the subject**

There should be strong evidence of a thorough knowledge of the visual arts aspects of the topic, and the essay should successfully incorporate and discuss visual images.

### **Criterion G: use of language appropriate to the subject**

There should be evidence of familiarity with, and the accurate and effective use of, visual arts terminology. Appropriate vocabulary must be used to describe historical periods, artistic styles and so on.

### **Criterion H: conclusion**

"Consistent" is the key word here: the conclusion should develop out of the argument and not introduce new or extraneous matter. It should not repeat the material of the introduction; rather, it should present a new synthesis in light of the discussion.



### **Criterion I: formal presentation**

This criterion relates to the extent to which the essay conforms to academic standards about the way in which research papers should be presented. The presentation of essays that omit a bibliography, appropriate (and acknowledged) visual images, or that do not give references for quotations is deemed unacceptable (level 0). Essays that omit one of the required elements—title page, table of contents, page numbers, visual references—are deemed no better than satisfactory (maximum level 2), while essays that omit two of them are deemed poor at best (maximum level 1). Within the visual arts, the “look” as well as the “craft” of the essay is given consideration.

In visual arts essays, illustrations should appear in the body of the essay, as close as possible to their first reference.

### **Criterion J: abstract**

The abstract is judged on the clarity with which it presents an overview of the research and the essay, not on the quality of the research question itself, nor on the quality of the argument or the conclusions.

### **Criterion K: holistic judgment**

Qualities that are rewarded under this criterion include the following.

- Intellectual initiative: Ways of demonstrating this in visual arts essays include the choice of topic and research question, and locating and using a wide range of sources, including some that may have been little used previously or generated for the study (for instance, transcripts of interviews with artists and collectors).
- Insight and depth of understanding: These are most likely to be demonstrated as a consequence of detailed research, reflection that is thorough and well informed, and reasoned argument that consistently and effectively addresses the research question.
- Creativity: In visual arts essays, this includes qualities such as new and inventive approaches to artistic analysis, new approaches to “well-worn” or popular topics, or attention to new topics and questions.

## World religions

These subject guidelines should be read in conjunction with the “Introduction”, “Outline” and “Details—all essays” sections of this guide.

### **Overview**

Extended essays in world religions provide students with the opportunity to undertake an in-depth investigation into a limited topic within the field of world religions. The study should integrate disciplined research that is informed by scholarly methods with original and imaginative analysis, interpretation, and critical evaluation of the results of that research.

Students who are considering submitting an extended essay in world religions are strongly advised to study carefully a copy of the Diploma Programme syllabus for this subject, before making a final decision. The syllabus gives a clear idea of the scope and content of the subject, and will help students to decide whether their choice of topic is appropriate.

World religions comprises a systematic, critical, yet sensitive study of the variety of beliefs, values and practices encountered in religions around the world. A rigorous attempt is made to maintain objectivity in the analysis and evaluation of religions. This requires, at the very least, an authentic attempt to understand the beliefs, values and practices of the religion being studied by using language and concepts drawn from that religious tradition. Essays that are primarily a defence or critique of the beliefs, values and practices of a particular religious tradition, or that

explain or evaluate religious phenomena from the standpoint of another religious tradition or of a secularist ideology, are unacceptable.

The concern is not just with what the followers of a faith believe and do, but also with an understanding of why they do so, through an appreciation of the form of life and world outlook that they constitute. The result of writing an essay in world religions should be, among other things, improved intercultural understanding.

### Choice of topic

Essentially, students may choose to answer any well-defined question about any of the world’s religions, present or past, subject to the following guidelines.

- Topics must be appropriate to the subject. Extended essays must address the beliefs, values and practices of religious traditions and show a genuine understanding of the religion from the standpoint of its adherents. Essays that are only indirectly related to religion—for example, legal issues relating to school prayer, the wearing of religious symbols, or the scientific validity of “creation science”—are not acceptable.
- It should be made clear to students who have not followed a course in world religions, and who are, therefore, unfamiliar with the discipline and its methodology, that an essay in world religions is not an opportunity to write an essay of a confessional, evangelizing, or apologetic nature. This means that students should avoid topics that involve making judgments about the truth-value of religious beliefs.
- Essays should not be purely descriptive but should shed some light on why people believe and/or act as they do, or on the relationship between the religion and the culture of which it is a part. Students should ideally either have taken a course in the discipline or spent some time in independent study, preferably with a mentor who has significant background in the discipline.
- The research question should be well defined. Topics that are too broad nearly always result in essays that are superficial, purely descriptive, and riddled with errors and misconceptions.
- The research question should permit investigation using a method or approach that the student is capable of completing successfully, given his or her level of training, and the time and resources available. In other words, students should not plan an essay that requires access to unobtainable or unreadable primary sources, or that requires a larger number of in-depth interviews than there is time to carry out.

The most successful essays generally focus on the analysis or interpretation of a particular religious text, image, ritual or practice, or examine the significance of a well-defined concept in a particular religious tradition. Some examples of this could include the following.

|                   |   |
|-------------------|---|
| <b>Topic</b>      | <b>The politics of religious symbols in France</b>  |
| Research question | Why do some high school students in France wear religious symbols to school? Why do many people in France object?   |
| Approach          | An in-depth interview study of attitudes towards wearing religious symbols in public schools in France.   |
| <b>Topic</b>      | <b>Creationism</b>  |
| Research question | Why is the doctrine of creation so central to contemporary evangelical Protestantism?   |
| Approach          | An analysis of the understanding of the doctrine of creation and its relationship to other doctrines in the work of three contemporary evangelical theologians. |

|                   |  |
|-------------------|--|
| <b>Topic</b>      | <b>Prophecy</b>  |
| Research question | What are the differences in the understanding of prophecy in Judaism, Christianity and Islam?  |
| Approach          | A study of the usage of the Hebrew, Greek and Arabic words translated into English as “prophet” in selected texts from the Hebrew Scriptures, the New Testament and the Koran.                                     |
| <b>Topic</b>      | <b>Prayer in public schools</b>  |
| Research question | How do high school students in South Carolina experience school prayer and its prohibition?  |
| Approach          | An in-depth interview study of the attitudes and experience of South Carolina high school students regarding school prayer.  |
| <b>Topic</b>      | <b>Sacred spaces</b>   |
| Research question | What is the difference between a Catholic church and a mosque?   |
| Approach          | An ethnographic study incorporating observation and interviews of believers visiting both types of sacred space, informed by background reading of theological texts addressing the question from both traditions. |

### Treatment of the topic

The first step in preparing an extended essay is to formulate a well-defined research question. Essays that pose a question that might reasonably be answered in different ways are generally better than those that simply discuss a topic, even one within the limits defined above. The best research questions are those that indicate familiarity with existing research and with the larger concerns of the discipline.

Many methods of investigation are possible. Students might, for instance:

- analyse and interpret a sacred text, image, or ritual
- analyse the role of a particular doctrine within one or more theological systems
- conduct in-depth interviews in order to understand how ordinary believers approach a particular religious belief or practice.

Students should be careful to obtain the permission of the leaders of religious communities before observing services and rituals, and should obtain the permission of everyone they interview, making it clear how the results will be used and how, if at all, the interviewees will be identified.

Students are encouraged to use both primary and secondary sources. Secondary sources should be consulted in order to locate the topic being studied within a broader context, and to gain an understanding of various methods of investigation, analysis, interpretation and argument. The best essays generally test these established positions against primary sources or data collected for the extended essay.

Supervisors should make sure that students have at least a basic grasp of the scholarly methods needed to interpret primary sources—for example, literary, source and historical-critical approaches to sacred texts, formal and iconographic analysis of visual images, various approaches to the interpretation of rituals. While it is understood that students are just beginning their study of world religions and are not expected to have a complete mastery of methodological issues, essays that contain naïve analyses and interpretations that reflect no training, and could have been prepared without any formal study, will not receive high scores.

It is important that methods of investigation and analysis are appropriate to the topic and well executed. In-depth interviews are an excellent way of finding out how ordinary members of a religious community actually understand and experience their religion, but a study of this sort must involve a significant number of interviews with a diverse cross-section of the population being studied. Interviews should not be used naïvely as a source regarding the “official teachings” of a religious institution: simply supplementing readings of secondary sources with a few interviews with local clergy accomplishes very little.

Comparisons between **well-defined** aspects of two or more different religions are permissible, but students must take great care to ensure that the comparisons are, on the one hand, genuine, clear and specific, and, on the other, a manifestation of sensitive and objective analysis. It is important to understand that different religions do not always pose competing answers to the same questions, but actually pose different questions, making comparative approaches difficult at best. Should the student or the supervisor have any doubts about the student’s ability to meet these criteria, a comparative study should be avoided. Comparison in religious studies means the comparing of ideas or practices, not the making of value judgments such as “Buddhist meditation is more effective than Christian prayer”.

Students should be aware that few religious traditions are monolithic, and so naïve analyses of “Christianity” or “Buddhism” are unlikely to attain the depth necessary for an excellent extended essay. Students should be as specific as possible about exactly what they are studying.

The results of the investigation, analysis and interpretation should be presented in the form of a well-written, well-organized argument that supports a clear and well-defined answer to the research question. Logical links and relationships between ideas should be spelled out. The conclusions should show an understanding of the wider implications of the research.

The use of materials such as drawings, pictures and photographs should be encouraged where they appropriately illustrate the discussion/argument. These should be included in the essay in a way that makes the intended point, and this point should be spelled out clearly in the analysis, interpretation and argument. When such materials are derived from another source, that source must be acknowledged.

## Interpreting the assessment criteria

### Criterion A: research question

Although the aim of the essay can best be defined in the form of a question, it may also be presented as a statement or proposition for discussion. The research question must be appropriate to the particular subject in which the essay is submitted. In world religions, this means that it must in some way address the beliefs, values and practices of one or more religious traditions, and show some understanding of world religions as a discipline. Questions that, by their very nature, require a defence or critique of the beliefs, values or practices of a particular religious tradition, or that properly belong in another discipline because the issues being addressed are scientific, legal or political, receive a score of zero.

### Criterion B: introduction

The introduction should situate the research question in the context of existing research in the discipline of world religions (including the specific sub-discipline in which the topic of the essay is located). The student’s personal experience or particular opinion is rarely relevant here.

### Criterion C: investigation

Essays submitted in world religions should show familiarity with the existing literature and with scholarly methods appropriate to the specific research question being addressed. The use of primary sources, especially sacred texts, should reflect at least a basic sensitivity to problems of analysis and interpretation. Naïve readings of religious texts receive lower scores than those that are informed by an understanding of historical-critical, source-critical, and literary-critical or other relevant issues. The same is true for the interpretation of survey or interview material,

observations of religious rituals or even theological texts, which must not be treated naïvely as representative or authoritative.

**Criterion D: knowledge and understanding of the topic studied**

Higher scores are given to essays that show:

- a broad familiarity with the discipline and relevant scholarly methods, including, especially, knowledge obtained from the proper use of primary sources or scholarly secondary sources
- an understanding of how the religion looks from the inside
- some element of unique insight or innovation.

Lower scores are given to essays that show little or no knowledge of the topic, that are full of misconceptions that would have been resolved by even cursory study, or that reflect only a confessional perspective, catechetical formation, or basic factual knowledge of the kind that might be obtained from world religions textbooks or encyclopedia articles.

**Criterion E: reasoned argument**

To meet the requirements of this criterion, students should ensure that the argument is appropriate to the discipline and the specific scholarly methods used.

**Criterion F: application of analytical and evaluative skills appropriate to the subject**

World religions is a diverse discipline and this criterion measures the extent to which, and the effectiveness with which, the student uses methods appropriate to the specific research question. Depending on the question, this might mean the historical-critical analysis and interpretation of sacred texts, the use of statistical methods in analysing survey data, the use of “thick description” or “interpretive understanding” to evaluate in-depth interview or participant observation material, or the use of philosophical or theological argument to address a disputed question. The highest scores are given to essays that both choose the correct methods and use them effectively.

**Criterion G: use of language appropriate to the subject**

In world religions, the use of language must reflect an understanding both of the religious tradition studied, as experienced by believers, and of the discipline of world religions.

**Criterion H: conclusion**

“Consistent” is the key word here: the conclusion should develop out of the argument and not introduce new or extraneous matter. It should not repeat the material of the introduction; rather, it should present a new synthesis in light of the discussion. The best conclusions will identify new questions arising from the research or will reflect on its larger significance. In world religions, this might mean its significance for the discipline or its implications for the religious tradition studied or the larger communities of which it is a part.

**Criterion I: formal presentation**

This criterion relates to the extent to which the essay conforms to academic standards about the way in which research papers should be presented. The presentation of essays that omit a bibliography or that do not give references for quotations is deemed unacceptable (level 0). Essays that omit one of the required elements—title page, table of contents, page numbers—are deemed no better than satisfactory (maximum level 2), while essays that omit two of them are deemed poor at best (maximum level 1).

In applying this criterion, attention should be paid to standards for citing sources and other evidence used by scholars in the discipline using comparable methods of investigation and the particular religious tradition studied. Sacred texts are, for example, generally cited differently to other sources (for example, chapter and verse rather than page numbers). The Koran and Buddhist sutras are cited differently to the Hebrew and Christian scriptures.

Other forms of evidence—ethnographic observations, survey research or in-depth interviews—should be cited in a manner standard for the discipline.

### **Criterion J: abstract**

The abstract is judged on the clarity with which it presents an overview of the research and the essay, not on the quality of the research question itself, nor on the quality of the argument or the conclusions.

### **Criterion K: holistic judgment**

Qualities that are rewarded under this criterion include the following.

- Intellectual initiative: Ways of demonstrating this in world religions essays include originality in the choice of topic and research question and in the development of the essay, locating and using sources that have been little used previously (assuming standard sources have also been mastered) or that are generated for the study (for instance, ethnographic observations or in-depth interviews), sophistication in the analysis and interpretation of that evidence, and taking new approaches to popular topics (possibly achieved through evaluation of varying historical explanations).
- Insight and depth of understanding: These can be demonstrated by setting the research question appropriately in the context of ongoing debates within the discipline of world religions, by the effective use of appropriate research methods, and by creativity in the development of the argument and conclusion. It can also be demonstrated by conveying to the reader a sense of how the religion feels from the inside.

## World studies

These subject guidelines should be read in conjunction with the “Introduction”, “Outline” and “Details—all essays” sections of this guide. Additional guidance on supervising, planning and writing a world studies essay and marked samples of past essays is given in the *World studies teacher support material*—available on the online curriculum centre.

### **Overview**

An extended essay in world studies provides students with an opportunity to undertake an in-depth, interdisciplinary study of an **issue of contemporary global significance**. World studies extended essays may examine issues such as the global food crisis, climate change, terrorism, energy security, migration, and global health, technology and cultural exchange. Global issues of this nature play out in local contexts—a zero-carbon-footprint city policy in Denmark; a new clean energy technology used by a village in India; the education of migrant children in two contrasting frontier towns. An in-depth examination of local instances of globally significant phenomena provides opportunities for a well-grounded appreciation and understanding of the issue under study.

Complex issues such as these can rarely be adequately understood if only approached from the perspective of a single subject. It is better to approach such issues through **interdisciplinary research**. The world studies extended essay requires students to identify an issue of global importance and develop a clear rationale for taking an interdisciplinary approach. It provides an opportunity for students to conduct independent interdisciplinary research—research that draws on theories, findings and methods from two or more IB Diploma Programme subjects and integrates them to produce a coherent and insightful analysis of an issue they choose to investigate.

The aims of this interdisciplinary extended essay, while similar to those for single-subject essays, are distinct in important ways. The interdisciplinary essay is designed to provide students with the opportunity to:

- **engage in, and pursue, a systematic process of research appropriate to the topic**—a process that is informed by knowledge, concepts, theories, perspectives and methods from at least two chosen subjects
- **develop research and communication skills**—including the ability to communicate with readers who have a background in more than one subject/discipline
- **develop the skills of creative and critical thinking**—particularly those skills involved in integrating concepts, theories, perspectives, findings, or examples from different subjects to develop new insights or understandings
- **experience the excitement of intellectual discovery**—including insights into how different subjects complement and/or challenge one another when used to address the same topic or issue.

Furthermore, in line with the IB’s mission, the world studies extended essay seeks to advance students’ **global consciousness**. Global consciousness encompasses:

- **global sensitivity**—a sensitivity to local phenomena and experiences as manifestations of broader developments on the planet
- **global understanding**—the capacity to think in flexible and informed ways about issues of global significance
- **global self**—a developing perception of self as a global actor and member of humanity, capable of making a positive contribution to the world.

In the world studies extended essay, global consciousness can be seen as “the capacity and the inclination to place people, objects, situations with which we come into contact, (including the self) within the broader matrix of our contemporary world. An individual exhibits global consciousness when she is attuned to daily encounters with world cultures, landscapes and products; can place such encounters in a broader narrative or explanatory framework of contemporary global processes; and perceives herself as an actor in such a global context”.<sup>[1] [1]</sup> Boix Mansilla, V, and Gardner, H. (2007). From teaching globalization to nurturing global consciousness. In MM. Suárez-Orozco (Ed.), *Learning in the Global Era: International Perspectives on Globalization and Education*. Berkeley, USA. University of California Press.

## Choice of topic

Many topics are potentially suitable for a world studies extended essay. **The chosen topic must address both an issue of global significance, and invite an interdisciplinary approach.** The most successful topics reveal connections between specific and/or local places, people, phenomena or experiences, and the larger global framework in which they take place. Topics must invite a critical examination of the issue in light of relevant theories, methods and arguments in two or more subjects. When choosing a topic, it is important for students to bear in mind that it must encourage analysis and evaluation rather than description and unsupported value judgments.

When choosing a topic, students must ensure that the various assessment criteria can be satisfied within the 4,000-word limit. Students are advised to avoid topics that are too broad in scope to permit an in-depth study within the prescribed word limit. A limited topic thoroughly researched and with a clear focus is preferable to a broad topic that can only be examined superficially.

Students may use journalistic or visual material, interviews, or data from the internet, but their essays should not be based solely on such sources. An extended essay in world studies is expected to show that the student possesses a knowledge and understanding of relevant theories, research methods, or findings in the selected IB Diploma Programme subjects.

## Treatment of the topic

Students should craft a specific research question that is both interesting to them and challenging. The question chosen should be limited in scope and sufficiently narrow to allow students to examine an issue or problem in depth. It should present the student with the opportunity to collect or generate information and/or data for analysis and evaluation. Many extended essays will address a research question but inquiries designed to test a hypothesis are also viable.

To address their research question students should ask themselves what aspects of the problem they will need to understand and which subject, or subjects, may best equip them with a set of optimal and viable tools to help them develop a sound understanding of the issues. They should consider how bringing two or more disciplinary perspectives to bear might yield a deeper or better account of the issue. World studies extended essays must demonstrate students' capacity to employ insights from the selected subjects and meaningfully connect them to address the topic. It is expected that students will have a good grounding in at least one of the IB Diploma Programme subjects used in the essay. If they are unfamiliar with a discipline used, they must access the relevant syllabus for that subject and be able to identify concepts and modes of thinking used in the essay.

The student's supervisor should be appropriately qualified to give advice in at least one of the subjects used by the student. If other subjects are touched upon in the essay and there are appropriate subject specialists available in the school, students are encouraged to consult them about research, concepts and approaches. However, each student should only have one main supervisor who takes on the role as outlined in the introduction of this guide and who signs the extended essay coversheet.

To do justice to their chosen topic, students will also have to ask themselves how the particular local cases under study illustrate larger processes or issues of global import. They may view a local case as an opportunity to explore the complexities of the problem in a manageable scope or as a way to document "best practices" and offer lessons beyond the local focus. Occasionally, students may choose to compare two small cases from different contexts.

The following examples of world studies extended essays are intended as guidance only. They illustrate that multifaceted questions should be encouraged rather than broad ones that do not clearly state exactly what about the issue is being investigated. In each case the essay title provides a sharp focus on an issue of global significance. The research question further articulates the focus of the study.

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| <b>Title</b>             | <b>HIV-AIDS and religion: Beliefs and knowledge about HIV-AIDS among members of different religious communities in Mombasa, Kenya</b>   |
| Research question        | What do members of three religious congregations (Hindu, Muslim and Christian) in my city, Mombasa, believe, or know about, the causes, transmission and cures of HIV-AIDS, and how might religious beliefs inform these people's views?  |
| Global–local perspective | Concern about the HIV-AIDS epidemic permeates both the developed and developing world. The impact of the disease on individuals and communities is unevenly concentrated in Sub-Saharan Africa, where more health education is needed (global). Learning about HIV-AIDS involves informing one's initial beliefs about its causes and cures—beliefs that often intersect with cultural and religious values. This essay examines how religion and learning about HIV-AIDS interact in the particular case of three religious communities in Mombasa (local). Its results show how religion mediates learning about the disease in this particular locality (local). It invites reflection on the importance of attending to religion, as a key dimension of human life in development work more generally (global). |



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| Dimensions and disciplines | To address the question the student might consider the following. <ul style="list-style-type: none"> <li>• What constitutes popular beliefs versus scientific explanations of HIV-AIDS, its causes and cures? (biology)</li> <li>• How have the three religious communities approached the spread of HIV-AIDS in Kenya and how is illness explained in selected passages of religious texts? (world religions)</li> <li>• How best to collect reliable data on beliefs and knowledge about HIV-AIDS. (social science methodology)</li> </ul>  |
| Approach                   | This choice of topic integrates biology, world religions and social science (survey design). After introducing the problem and impact of HIV-AIDS in East Africa, the student reports on an empirical study in which leaders, adults and youths in three religious communities completed a questionnaire about their views on HIV-AIDS. The multiple-choice questionnaire is structured to capture popular beliefs and misconceptions about HIV-AIDS (its causes, transmission and cure) as well as scientific biological explanation. Results reveal consistent views within religious communities but important differences across them. To discuss these differences the student examines the different reactions religious communities have to the spread of AIDS and draws on sacred text to hypothesize why such differences may exist. |
| <b>Title</b>               | <b>Express yourself! Youth culture: A global phenomenon with local meanings everywhere</b>  |
| Research question          | How and why have two Japanese graffiti artists used American hip hop art for the purposes of self-expression and community organization in their country?   |
| Global–local perspective   | Key to globalization is the accelerated traffic of cultural products around the world. From McDonalds to hip hop, these products illustrate how our world is becoming more alike. As different cultures interpret and use such products in a variety of ways, they also illustrate how different our cultural outlooks can be. The phenomenon of youth culture as a dynamic sharing of ideas, creativity and forms of expression among young people worldwide is examined. This is achieved by exploring how two Japanese artists combine artistic motifs from their American counterparts with traditional Japanese ideas in their graffiti designs to create new culturally relevant expressions of individuality and independence.   |
| Dimensions and disciplines | To address the question the student might consider the following. <ul style="list-style-type: none"> <li>• What artistic choices—for example, imagery, style, colour, location— have these artists made, and in what ways do these decisions echo and/or depart from popular trends in American graffiti? (visual arts)</li> <li>• What styles, tastes and ideas characterize contemporary Japanese youth culture? Are they represented in these artists’ work? How and why have these artists used graffiti to express their individuality in a culture that emphasizes collectivity? (social and cultural anthropology)</li> </ul>  |
| Approach                   | The student draws from visual arts and social and cultural anthropology to explore graffiti art in Japan. After providing some background on the hip hop movement as a global phenomenon, the work of two Japanese graffiti artists is examined. The student draws on American and Japanese art critics to compare the Japanese works of art to those of American graffiti artists. She shows how contemporary Japanese culture has influenced the style and content of their work by examining symbols that reflect Japanese youth today. The student discusses how and  |

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|                            | <p>why the artists include cultural critique messages in their work and what these opinions suggest about Japanese society in general.</p>   |
| <b>Title</b>               | <b>Weed infestation in fresh water—weed kills fish which in turn destroys the livelihood of fishermen</b>  |
| Research question          | What is the impact of non-native aquatic plants on marine and inland environments?   |
| Global–local perspective   | The student examines species infestation in the particular case of Lake Maracaibo’s ecosystem and fishing industry (local). After considering this case in-depth, a comparison is drawn between similar species infestation cases taking place around the world (global). The student concludes that accelerating trade, and a growing world population, are resulting in increasing activity on the planet’s shores, and calls for the development of sustainable approaches to development (global).   |
| Dimensions and disciplines | <p>To address the question the student might consider the following:</p> <ul style="list-style-type: none"> <li>• How is the tender balance of natural ecosystems maintained and how do species compete for resources within them? (environmental systems and societies)</li> <li>• How will I develop criteria to monitor biodiversity and diagnose infestation? (environmental systems and societies)</li> <li>• What incentives lead companies to follow more or less sustainable practices? (economics)</li> </ul>                                 |
| Approach                   | The student surveys the deliberate and accidental transplanting of aquatic species by human activity as the global issue and considers some worldwide examples such as parasitic plants and algal blooms. The local case study explains the science of a particular weed infestation on Lake Maracaibo and other waterways nearby. The consequences for lost human livelihoods (for example fishing, shipping) are considered, and through interviews with academic experts some realistic proposals are evaluated with a view to solving the problem. |
| <b>Title</b>               | <b>Infant nutrition practices in a comparative perspective: The use of powdered milk in developing and developed countries</b>   |
| Research question          | How does baby formula affect the health of infants, and why is it such a popular alternative to mother’s milk in the Philippines and Canada?   |
| Global–local perspective   | By comparing newborn feeding practices in two clinics, one in the Philippines (local) and the other one in Canada (local), the student demonstrates how similar behaviours can be rooted in reasons that differ greatly in different parts of the world (global).  |
| Dimensions and disciplines | <p>To address the question the student might consider the following.</p> <ul style="list-style-type: none"> <li>• Positive and negative effects of baby formula on infants’ health. (biology)</li> <li>• The presence of baby formula products in each country—investment, sales, advertisements, government advisories and regulations on the use of baby formula (business and management). Mothers’ beliefs about their babies’ health and nutritional needs. (psychology)</li> </ul>   |
| Approach                   | The approach here integrates (human) biology, business and management (marketing), and psychology. After explaining the debate about the effect of baby formula on infants’ health, the student reports an empirical study in which 20 mothers with newborn babies in two public   |

hospitals (Philippines and Canada) completed a questionnaire about their babies' nutritional needs, their awareness of government recommendations on the use of baby formula and their feelings about the advertisement campaigns. Results revealed different rationales for the popularity of baby formula consumption.

**A weak essay in this category would be one that:**

- does not give a strong sense of why the inquiry is important and how it links with a global issue
- defines the problem too broadly, given the 4,000 word limit for the essay, and therefore offers a superficial account
- is largely based on common sense, media or basic information from the internet rather than employing concepts, theories and findings from the subjects involved
- uses subjects (knowledge or methods) without a clear and coherent idea of why these are warranted in the inquiry
- juxtaposes theories, methods and findings from different subjects without any attempt to show how they come together to address the topic in a relevant or compelling way
- offers merely a description of the problem under study without providing a critical examination (for example one that explains, compares, critiques, analyses the topic under study in depth).

**Researcher's reflection space**

The **researcher's reflection space** is strongly recommended as part of the world studies extended essay process, providing a space for candid reflection on the issue being studied and how it relates to students' own world views, values and aspirations as global citizens.

The reflection space gives students an opportunity to reflect on their work in personally meaningful ways. It can take the form of a notebook or a blog. It is created by students to record notes on their readings, gather topic-related media clips, paste selected and marked readings, or reflect about interviews, data, and emerging findings. Most importantly, it is a space where students can reflect candidly about their own views and lifestyles, feelings, values, aspirations and commitments as global citizens in relation to the topic under study.

The world studies extended essay offers an opportunity for students to develop their global consciousness. The reflection space is the place where particular moments of such development are documented, enabling students to reflect upon and deepen their personal connections to the problems under study and gain an insight into whether, or how, learning about contemporary world issues informs their values, beliefs, or commitments in this key phase of their lives. The best examples of reflection space exhibit students' ongoing reflection about who they are as local, regional and global actors.

The reflection space is a document for the student. Students may choose to share a section of the space with their teachers in preparation for a meeting. Supervisors may assign focused reflection tasks for students to include in their space but, fundamentally, this is a student-led space to be owned by the students.

Students may also include selected pages from their reflection space in the appendix of their extended essay. Supervisors should refer to the shared sections of this space when they complete the supervisor's report on the extended essay coversheet. These comments help examiners when they consider the assessment of criterion K: holistic judgment.

It is intended that a well-planned researcher's reflection space arises naturally out of the student research process and should not involve any extra work.

## Interpreting the assessment criteria

### Criterion A: research question

In world studies, the research question must focus on an issue of **contemporary global relevance** that the student has investigated; at the same time, this is an **interdisciplinary** essay and the research question must clearly invite an integrative approach involving dimensions that are typically studied in the different disciplines.

### Criterion B: introduction

The introduction should explain succinctly the significance and context of the topic and why it is worthy of investigation. A brief overview as to how the research question links a precise or local issue to a global development should be included. Key concepts or categories should be defined and related to their academic context. A good introduction should explain how the research question requires an interdisciplinary approach, which IB Diploma Programme subjects should be used and why, and offer definitions of key concepts selected from these subjects. The introduction may also include an outline of the essay; it should not include irrelevant background material.

### Criterion C: investigation

The materials, sources, data and evidence considered should be relevant to the study and deployed appropriately in the essay given the perspectives of the IB Diploma Programme subjects being used. Students are expected to employ theories, methods and findings from two or more subjects. While journalistic and media sources are permitted, the essay should also include perspectives based on selected subjects. Successful essays may include subsidiary questions that organize the research design and the reporting of findings.

### Criterion D: knowledge and understanding of the topic studied

Students should select concepts, theories, perspectives, findings or examples from two or more subjects, demonstrating a sound grasp of the knowledge bases, modes of understanding, and methods of communication of the different subjects. They should place the issue in academic context and indicate the limitations of individual subjects in terms of considering the issue. The award of achievement levels of 2 or above requires evidence that two or more subjects have been used in the essay. Higher levels (3 or 4) require increasingly explicit awareness of the strengths and limitations of the individual subject concepts or ideas.

### Criterion E: reasoned argument

Students should present their ideas in the form of a logical and coherent argument that is relevant to the research question. Ideas should be substantiated with evidence and examples. Straightforward descriptive or narrative accounts that lack analysis do not usually advance an argument and should be avoided. In addition, successful interdisciplinary essays scoring a level 3 or 4 require an **integrative** argument or explanation—that is, the different subjects should be coherently brought together to address the question through, for example, a complex causal explanation, a leading metaphor, a model, an analogy.

### Criterion F: application of analytical and evaluative skills appropriate to the subjects

Students should analyse and evaluate their evidence in a manner appropriate to the question asked and the IB Diploma Programme subjects employed in the essay, for example, assessing the reliability of sources and evaluating the implications of research reports. At the highest level 4, students should demonstrate effective and nuanced analysis and evaluation of information and findings, as well as evaluation of the success and limitations of their own integrative approach to the issue.

### **Criterion G: use of language appropriate to the subject**

The use of language must be effective and include terminology and concepts relevant to the issue and subjects under study. Students should bear in mind that contested or ambiguous terms may need to be defined and that their work should be accessible and acceptable to audiences from the different subjects being integrated.

### **Criterion H: conclusion**

The essay should have a conclusion consistent with its argument indicating how understanding has been advanced by the integration of perspectives from different subjects. In some cases this may lead to new insights and new questions in relation to the global issue studied.

### **Criterion I: formal presentation**

This criterion relates to the extent to which the essay conforms to academic standards about the way in which research papers should be presented. Essays that omit one of the required elements—title page, table of contents, page numbers, are deemed no better than satisfactory (maximum level 2), while essays that omit two of them are deemed poor at best (maximum level 1).

### **Criterion J: abstract**

The formal abstract should include:

1. the research question
2. how and why it was investigated, including the subjects involved and how they were brought together
3. the conclusion.

### **Criterion K: holistic judgment**

Qualities such as personal engagement, initiative, and depth of understanding, insight, inventiveness and flair are assessed under this criterion. Special attention will be paid to signs of an emerging **global consciousness** where students demonstrate an awareness of issues around them, an understanding of the world in which we live, and a sense of themselves as global citizens. The award of achievement level 2 requires that the essay shows some evidence of a range of these qualities or clear evidence of one of the qualities. The awarding of higher achievement levels 3 and 4 requires that students show considerable evidence of global consciousness, which may be reflected in one or more of the following:

- personal reflections embedded in the essay
- the researcher's reflection space—extracts of which can be placed in the appendix
- the supervisor's account of the *viva voce*.