Diploma Programme

Guide

Extended essay

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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.

As IB learners we strive to be:

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

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

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

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

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

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

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

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

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

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

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

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Introduction to 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 be able to evaluate a range of points of view.

The Diploma Programme model

The programme is presented as six academic areas enclosing a central core (see figure 1). 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 and 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 and can choose subjects that particularly interest them and that they may wish to study further at university.

Figure 1

The Diploma Programme model

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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 that is assessed by teachers.

First assessment 2018

General introduction to the core of the Diploma Programme

- The core of the Diploma Programme
- Coherence in the core
- Approaches to teaching and learning
- Approaches to teaching and learning and the extended essay
- Approaches to teaching
- Approaches to learning
- The IB mission statement and the IB learner profile
- Academic honesty
- Learning diversity and learning support requirements

The core of the Diploma Programme

All Diploma Programme students participate in the three elements that make up the core of the programme:

- theory of knowledge
- creativity, activity, service
- the extended essay.

These three elements of the core complement each other, working together to achieve the following common aims:

- to support, and be supported by, the academic disciplines
- to foster international-mindedness
- to develop self-awareness and a sense of identity.

Theory of knowledge (TOK) is fundamentally about critical thinking and inquiry into the process of knowing rather than about learning a specific body of knowledge. The TOK course examines the nature of knowledge and how we know what we claim to know. It does this by encouraging students to analyse knowledge claims and explore questions about the construction of knowledge. The role of TOK is to emphasize connections between areas of shared knowledge and link them to personal knowledge in such a way that an individual becomes more aware of their own perspectives and how they might differ from others.

Creativity, activity, service (CAS) is at the heart of the Diploma Programme. The three strands of CAS are:

- creativity (arts and other experiences that involve creative thinking)
- activity (physical exertion contributing to a healthy lifestyle)
- service (an unpaid and voluntary exchange that has a learning benefit for the student).

The emphasis in CAS is on helping students to develop their own identities, in accordance with the ethical principles embodied in the *IB mission statement* and the *IB learner profile*. It involves students in a range of activities alongside their academic studies throughout the Diploma Programme.

Possibly, more than any other component in the Diploma Programme, CAS contributes to the IB's mission to create a better and more peaceful world through intercultural understanding and respect.

The extended essay, including the world studies extended essay, offers the opportunity for IB students to investigate a topic of special interest, in the form of a 4,000-word piece of independent research. Students select an area of research from Diploma Programme subjects, or in the case of the interdisciplinary world studies essay from two subjects, and become acquainted with the independent research and writing skills expected at university. 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 or

subjects chosen. It is intended to promote high-level research and writing skills, intellectual discovery and creativity. As an authentic learning experience, the extended essay provides students with an opportunity to engage in personal research on a topic of choice, under the guidance of a supervisor.

Coherence in the core

The three elements of the core (TOK, CAS and the extended essay) were introduced by the original curriculum designers of the Diploma Programme as a way to educate the whole person. Strongly committed to the principle of developing the whole person, the IB believes that this is best achieved by identifying and developing clearer and more explicit aims for and relationships between these three elements. Specifically, the IB believes a coherent view of the core will:

- support the interconnectedness of learning
- support concurrency of learning
- support the IB continuum of education and the IB learner profile
- support a broader view of the subject disciplines.

Supporting, and being supported by, the academic disciplines

The core is seen as the heart of the Diploma Programme. The academic disciplines, while separate to the core, are nonetheless linked to it. The core relies on the disciplines to provide enrichment, and individual subjects should be nourished by the core. Teachers in each of the three elements of the core need to carefully plan and consider how TOK, CAS and the extended essay can feed into a deeper understanding of the subject matter studied by Diploma Programme students in their individual subjects. This will include, for example:

- transferring the critical thinking process developed in TOK to the study of academic disciplines
- developing service learning opportunities in CAS that will build on a student's existing subject knowledge and contribute to the construction of new and deeper knowledge in that subject area
- exploring a topic or issue of interest which has global significance in an extended essay through one or more disciplinary lenses.

Fostering international-mindedness

The core has a responsibility to foster and nurture international-mindedness, with the ultimate goal of developing responsible global citizens. To a large extent, the core should be driven by the IB's mission to:

> "develop inquiring, knowledgeable and caring young people who help to create a better and more peaceful world through intercultural understanding and respect" and "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 mission statement*)

To this end, the core should encourage an exploration of issues of global significance and in so doing allow students to examine links between the local and the global. It should encourage students to consider the contexts and views of others, and should ensure that the principles and values developed by students are reflected upon throughout their lifetime. This might include, for example:

- emphasizing different cultural perspectives in TOK and how different cultural traditions have contributed to our current constructions of knowledge
- considering a service project in CAS that reflects an issue of global significance, but is explored from a local perspective
- encouraging students to write a world studies extended essay—an interdisciplinary extended essay on a global theme.

Developing self-awareness and a sense of identity

The core should strive to make a difference to the lives of students. It should provide opportunities for students to think about their own values and actions, to understand their place in the world, and to shape their identity. This might include, for example:

- providing opportunities in TOK for students to have conversations with others from different backgrounds and with different viewpoints, thereby challenging their own values
- encouraging students in CAS to evaluate their commitment to helping those in need and exploring the notion of advocacy
- asking students to reflect on the process of writing the extended essay and in so doing identifying areas of strength and areas for development.

Approaches to teaching and learning

The term *approaches to teaching and learning* (ATL) across the Diploma Programme refers to deliberate strategies, skills and attitudes which permeate the teaching and learning environment. These approaches and tools, intrinsically linked with the learner profile attributes, enhance student learning and assist student preparation for Diploma Programme assessment and beyond. The aims of approaches to teaching and learning in the Diploma Programme are to:

- empower teachers as teachers of learners as well as teachers of content
- empower teachers to create clearer strategies for facilitating learning experiences in which students are more meaningfully engaged in structured inquiry and greater critical and creative thinking
- promote both the aims of individual subjects (making them more than course aspirations) and linking previously isolated knowledge (concurrency of learning)
- encourage students to develop an explicit variety of skills that will equip them to continue to be actively engaged in learning after they leave school, to help them not only obtain university admission through better grades but also prepare them for success during tertiary education and beyond
- enhance further the coherence and relevance of the students' Diploma Programme experience
- allow schools to identify the distinctive nature of an IB Diploma Programme education, with its blend of idealism and practicality.

The five approaches to learning (developing thinking skills, social skills, communication skills, self-management skills and research skills) along with the six approaches to teaching (teaching that is inquiry-based, conceptually focused, contextualized, collaborative, differentiated and informed by assessment) encompass the key values and principles that underpin IB pedagogy.

More advice and support on these approaches to teaching and learning can be found in the next section of this subject guide. Additionally, a suite of materials on *approaches to teaching and learning* in the Diploma Programme is available on the OCC. The guidance in the following section builds on these resources.

Approaches to teaching and learning and the extended essay

The following articulation of some of the approaches to teaching and learning are for guidance only and demonstrate how the extended essay facilitates the development of these skills. The links and examples given are not exhaustive and teachers and students may identify other ways in which these skills are linked to their extended essay experience.

The six approaches to teaching are:

- teaching based on inquiry
- teaching focused on conceptual understanding
- teaching developed in local and global contexts
- teaching focused on effective teamwork and collaboration
- teaching differentiated to meet the needs of all learners
- teaching informed by assessment (formative and summative).

The five approaches to learning are:

- thinking skills
- communication skills
- social skills
- self-management skills
- research skills.

Approaches to teaching

Inquiry and the extended essay

The extended essay is perhaps the most inquiry-based activity that students will undertake, especially given that it is a completely open-ended task, directed by student interest. This is not coincidental: the extended essay is intended to encourage students to examine significant issues and areas of research that they personally care about in an in-depth and meaningful way. Through their research, students can learn not only about the topic of their research, methodology, and critical thinking, but they can also learn important transferable skills such as time management, perseverance, resilience, and decision-making.

Teaching based on inquiry

IB Programme Essentials

The idea behind inquiry-based teaching in IB programmes is to develop students' natural curiosity together with the skills of self-management, thinking, research and collaborative learning so that they can become motivated and autonomous lifelong learners.

There are different types of inquiry-based learning. These include:

- experiential learning
- problem- and project-based learning
- case-based learning
- discovery learning.

The most significant aspect of inquiry-based teaching is that students are actively engaged in their own learning, constructing their own understandings. In a classroom where inquiry-based teaching is happening, there is much interaction between students and between students and the teacher. The teacher's primary role in such a setting is to promote questions and to facilitate the learning process. Students have a degree of freedom to make decisions about how to proceed in their learning, which most often progresses from the concrete towards the abstract.

Conceptual understanding and the extended essay

In the extended essay, concepts play an important role in helping to frame the focus of the research students are undertaking, and also as a demonstration of their knowledge and understanding. Students who are able to engage critically in discussion about the concepts relevant to their area of research are able to demonstrate at a deeper level how different aspects of their learning are connected.

IB Programme Essentials

An important reason for using conceptually focused teaching in IB programmes is to help students develop their ability to engage with significant and complex ideas. Equally valuable are the discussions of the "big ideas" behind a topic, which can help students get to the heart of **why** they are learning what they are learning.

To appreciate the role of concepts in building lasting and significant understandings, it is helpful to think of concepts as the building blocks of students' cognitive frameworks. When they are learning at a conceptual level, students are integrating new knowledge into their existing understandings. They see how seemingly discrete topics are connected and are ready to transfer their learning to new contexts. A subject emerges for them in a holistic light. In a classroom where conceptually focused teaching is happening, there is continuous movement between learning facts and discussing what they mean, with students asking why the facts matter as a natural part of their learning process.

Local and global contexts and the extended essay

In extended essays contemporary examples, case studies and real-life engagement with local and global issues can bring students' research to life. This is particularly true for students choosing to complete a world studies extended essay, where the focus is on a contemporary issue of global significance. These issues tend to be dynamic, varied and present at all levels of global social organization; global issues have local ramifications and local issues are often a part of a wider phenomenon. Different factors can prompt students to choose to engage with an issue such as CAS activities or the desire to further investigate an issue raised in an individual subject but from a different perspective. Students who choose to focus on a global issue tend to have an interest in global issues generally, wanting to explore them through different disciplinary and interdisciplinary lenses.

Teaching developed in local and global contexts

IB Programme Essentials

As young individuals and as members of local and global communities, students make sense of the world through their life experiences and the world around them. IB programmes emphasize contextualized teaching because the more students can relate their learning to real-life contexts the more likely they are to engage with it. Equally valuable is that through enabling students to see the applications of their learning, contextualized teaching, like conceptually focused teaching, helps students to get to the heart of why they are learning what they are learning.

In order to appreciate the role of contexts for relevant learning, it is helpful to think of contexts as students' frames of reference. When they are learning in a contextualized way, students are grounding abstract ideas and new information in familiar real-life situations. In a classroom in which contextualized teaching is happening, concepts and theories are related to accessible and meaningful examples, illustrations and stories, which in turn inform further conceptual and theoretical understandings.

Effective teamwork, collaboration and the extended essay

Although the extended essay is an independent task, students should be guided through the process by an appointed supervisor. The supervision and reflection process is to ensure that students are given the opportunity to explore ideas, issues and challenges in a supportive environment. Using evidence from their Researcher's reflection space, students can engage in discussions with their supervisor about the direction and progress of their research, establishing working objectives and timelines.

Teaching focused on effective teamwork and collaboration

IB Programme Essentials

IB programmes acknowledge that learning is a social activity. Students and teachers come together, each with unique life experiences, beliefs, ideas, strengths and weaknesses. Learning is the result of these complex interactions.

An important aspect of the learning process is regular feedback from students to teachers on what they have and have not yet understood. Concrete and constructive feedback from teachers to students on performance is similarly crucial for learning to take place.

Meeting the needs of all learners and the extended essay

Although the extended essay is an independent task, guided by common criteria across all subjects, supervisors play an important role in guiding students to choose areas of research that allow them to demonstrate their ability within the subject area. Identifying and refining an appropriate and feasible

research question early on in the process is crucial. Additionally, throughout the research process supervisors can offer guidance and support—within the parameters of the task—at different levels for different students. For example, some students may not require the full five hours of supervision time permitted, whereas others will.

At the beginning of the process, the Diploma Programme/Extended Essay coordinator may wish to provide differentiated learning materials related to research methods and academic honesty to students. This could be in the form of study skills classes focused on research or note-taking, for example, or reading materials related to these.

Teaching differentiated to meet the needs of all learners

IB Programme Essentials

IB programmes promote equal access to the curriculum for all learners. Differentiation entails planning for student differences through the use of a variety of teaching approaches; implementing a variety of learning activities; and making a variety of formats and modes of exploring knowledge and understanding available to students. It also involves identifying with each student the most effective strategies to develop, pursue and achieve realistic and motivational learning goals. In the context of an IB education, special consideration often needs to be given to students' language backgrounds and skills. Affirming students' identity and valuing their prior knowledge are important aspects of treating students as unique individuals and helping them develop holistically as young human beings.

Assessment and the extended essay

The extended essay is assessed using generic assessment criteria complemented by subject-specific interpretations of the criteria. Students should have access to this early on in the process so that they are clear about how their work will be assessed. They should also be able to view exemplars of extended essays along with the accompanying examiner comments.

Through the supervision and reflection process, as part of the learning process, students should be tracking their progress, monitoring specific issues and reflecting on their own learning and skills development.

Teaching informed by assessment (formative and summative)

IB Programme Essentials

Assessment plays a crucial role in IB programmes in supporting and measuring learning. Formal Diploma Programme assessments are based on course aims and objectives and, therefore, effective guidance of these requirements also ensures effective teaching. Formative assessments developed by teachers are tools and processes to improve student learning. Here, feedback is most effective as a two-way process: students learn how they are doing, and teachers learn what students understand, struggle with, and find engaging. In addition to assessment tasks, such feedback can be provided more informally.

Approaches to learning

Thinking skills and the extended essay

In the extended essay thinking skills play a key role, especially in terms of providing students with the opportunity to demonstrate a deeper understanding of a very specific area of research. While metacognition is a skill that is embedded in Diploma Programme courses, in the extended essay critical thinking and reflection skills have a central role. Working on a specific area of research and engaging with different sources of information and data, students become exposed to different and new perspectives on issues and topics.

The extended essay requires students to engage with their research in an analytical and evaluative way. Further to this, the skill of reflection, particularly in relation to the process of conducting research, is highly valued. The mandatory reflection sessions and engagement assessment criterion place a high value on the benefits structured reflection can have on a student's learning and progress.

Through the Researcher's reflection space students are encouraged to reflect using a variety of different techniques, including written reflections, video diaries, blogs or MindMaps®, for example.

Thinking skills

IB Programme Essentials

A key feature of IB programmes is the opportunity given to students to develop their thinking skills and an awareness of themselves as thinkers and learners. Being "thinkers" is one of the IB learner profile attributes, and is defined as being able to apply thinking skills critically and creatively to recognize and approach complex problems, and to make reasoned, ethical decisions.

Thinking skills consist of a large number of related skills. In the Diploma Programme, particular emphasis is placed on skills such as metacognition, reflection, critical thinking, creative thinking, and transfer. Metacognition, or control over one's cognitive processes of learning, can be thought of as a foundation for developing other thinking skills. When practising metacognition, students think about the ways in which they process information, find patterns, and build conceptual understandings. Once they become aware that they are using a variety of techniques and strategies to perform even the most basic learning tasks, students can be encouraged to consider if there are more effective or efficient ways to achieve the same learning, to try out these new ways and evaluate them. Similarly, reflection is a thinking skill that plays a critical role in improving learning. When practising reflection, students think about the success, value or otherwise of their learning. The Diploma Programme course aims, assessment objectives and assessment tasks place a premium on higher order thinking skills, such as critical thinking, creative thinking and transfer.

Communication skills and the extended essay

The extended essay requires students to demonstrate their ability to communicate on a research topic of their choice in a specific way: in an academic paper. They will need to formulate arguments clearly and coherently, as well as draft and proofread their own work.

During their supervision and reflection sessions students will develop their ability to communicate their research ideas, progress, challenges and rationale, both orally and in terms of summative reflections on their *Reflections on planning and progress form*.

In developing their Researcher's reflection space students can use a range of different communication techniques to record their thoughts, ideas, progress, timelines and arguments. These may include MindMaps®, blogs, annotated articles or images. Excerpts from the reflection space may be shared with their supervisor during sessions to stimulate discussion.

Communication skills

IB Programme Essentials

Communication skills are not only important in IB programmes but are also an essential part of a wider dynamic in the learning community: they help to form and maintain good relationships between students, and between students and adults. Furthermore, being able to communicate well contributes to the development of students' self-confidence and enhances their future prospects, as communication skills are a critical ingredient of success in working life.

Communication skills consist of a cluster of different skills and forms of communication. The ability to listen and understand various spoken messages, to read and understand diverse written texts and other forms of media, and to respond clearly and convincingly in spoken, written and digital forms are all part of how students engage with others in the world. Some of these forms of communication are independent of era and culture, but interacting in and with the digital space is a significant part of most students' communication and social interaction. Online activities which are often collaborative in nature present exciting opportunities for the development of students' communication skills.

Social skills and the extended essay

There are strong links between social skills and the affective skills associated with self-management, which is an important part of the extended essay experience. This is especially true given that students are managing a substantial task, not only in terms of workload and timelines, but also in terms of intellectual challenge. Providing students with a variety of strategies to help support and guide them through the extended essay will be invaluable to their success. Developing a good working relationship with their supervisor is an important part of students' skills development in this area.

IB Programme Essentials

Closely related to communication skills are social skills, important in IB programmes, perhaps even more so than communication skills, for the role they play in the development of the learner as a whole and in the value of a community for learning. A starting point for developing students' social skills is to acknowledge that people differ greatly in terms of their degree of introversion or extroversion and that these differences should be respected. Similarly, different cultures have different expectations of appropriate behaviours in social situations. To be able to understand the perspectives of others, to form good relationships and to regulate one's own emotions and behaviour are at the heart of many of the IB learner profile attributes and the IB's aspiration to develop international-minded students. Schools, as formative communities in young people's lives, can play a significant part in the development of their social and emotional skills.

Self-management skills and the extended essay

As a substantial independent task, students undertaking an extended essay will need to identify and develop the necessary self-management skills to be successful. While support and guidance can be given from supervisors, part of the learning experience for students is to navigate their way through the extended essay independently. The benefits of the development of these skills are recognized when students progress to university and the workplace, and are expected to be able to manage their workloads and competing priorities.

Examples of approaches and activities that develop students' self-management skills in the extended essay include:

- establishing clear deadlines, managing expectations and specifying consequences if these are not met
- providing guidance and support regarding study techniques, such as time management, note-taking, mind mapping, and digital behaviour
- promoting the Researcher's reflection space as a planning and progress tool
- organizing supervision and reflection sessions which provide an opportunity for students to discuss their progress.

IB Programme Essentials

In addition to learning how to live alongside others, IB learners need to learn to persevere and be emotionally stable as individuals. Often, of course, these two processes go hand in hand, as membership and support of a community is critical for individual well-being. Learning to manage themselves is important for students in a demanding educational programme like the Diploma Programme, as well as a highly helpful competency in their later life.

Self-management skills consist of organization skills, such as setting goals and managing time and tasks effectively, and affective skills, such as managing one's state of mind, motivation and resilience.

Like other learning skills, self-management skills can be modelled and practised. For Diploma Programme students, time management is often a particularly pertinent organization skill. Strategies for improving time management include: breaking down assignments into achievable steps and creating a timeline for each step; planning revision and study plans for tests and examinations; and building study timetables. An important aspect of such strategies is not only how they affect students' use of time but that they give students a perception of greater control over their time.

Affective self-management skills, in turn, enable students to gain some control over their mood, their motivation, and their ability to deal with setbacks and difficulties. Students' affective skills can be developed in a school environment where students feel they have a degree of autonomy and self-direction, where they do not need to get things right the first time, through the setting of challenging but not too difficult objectives, and even through the teaching of psychological techniques such as mindfulness training.

Research skills and the extended essay

The extended essay is a research task providing the ideal opportunity for students to be able to demonstrate and develop their research skills. Students are able to engage in a wide variety of research depending on their choice of research topic and subject area. All students, regardless of their research area, are required to undertake a literature review which demonstrates their knowledge and understanding in context, and this requires them to be able to make informed choices about the relevancy, reliability and validity of secondary source material. Additionally, they must choose research methods and techniques appropriate and relevant to the research question posed and the subject for which they are submitting their essay. Furthermore, students must also ensure that they are aware of any IB policy related to **ethical** practice when undertaking research.

Given that students are required to treat sources of information critically, and this is especially true of sources of information located on the internet, it is important that as part of their general research skills training, they develop technology literacy, which refers to the ability to access and use technology responsibly. This includes accessing and using electronically based sources.

Another important research skill that is developed and demonstrated in the extended essay is academic honesty. Students should grasp the fundamental values, become conversant with the technical aspects, and be supported by learning strategies to help them develop consistent and *effective citing and referencing* skills, for example.

Research skills

IB Programme Essentials

Research skills are a central element of the inquiry-based pedagogy of IB programmes. While good research skills have always been at the heart of academic endeavour, the availability of digital resources and the explosion in the amount of information easily accessible to students make the development of research skills a particularly pertinent part of today's education. Also, learning to work with academic integrity and respecting the intellectual contributions of others is an important aspect of learning in all IB programmes.

Fundamental research skills include formulating focused and precise research questions, appraising sources, recording, analysing, evaluating and synthesizing information, and presenting and evaluating results.

Additionally, research today demands that students spend more time validating, comparing and contrasting available information, narrowing down the volume of data into a manageable quantity while being discerning about what is relevant. Although confident in browsing and communicating online, students often lack the information literacy skills they need for the kind of effective and self-directed research they are expected to conduct as part of their inquiries.

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.

The table below shows some of the links between the extended essay and the learner profile attributes.

Attribute	Connection to extended essay
Inquirers	Through research, students demonstrate both the acquisition of skills necessary to conduct inquiry and their interest in learning.
Knowledgeable	Students acquire in-depth knowledge of their topic through exploration of current literature and/or research.
Thinkers	Students make reasoned analysis of their research topic and apply critical thinking skills in a creative way.
Communicators	Students effectively express ideas and information in an academic way.
Principled	Students exercise academic honesty in all aspects of their work, showing respect for the ideas and work of others, and caring for the welfare of subjects studied and for the environment.
Open-minded	As researchers, students will seek out and express an appropriately wide range of points of view.
Caring	By clearly demonstrating the relevance of their topic, students exhibit their personal commitment to making a difference in the lives of others.
Risk-takers	Students explore new areas or novel situations and courageously defend their positions.
Balanced	Students' understanding of the importance of intellectual development is reinforced by the research process.
Reflective	Students draw conclusions on their topic demonstrating thoughtful consideration and they have the opportunity to assess their strengths and weaknesses.

Academic honesty

The Diploma Programme prides itself on promoting high standards of academic honesty.

Academic honesty in the Diploma Programme is a set of values and behaviours informed by the attributes of the learner profile. In teaching, learning and assessment, academic honesty serves to promote personal integrity, engender respect for the integrity of others and their work, and ensure that all students have an equal opportunity to demonstrate the knowledge and skills they acquire during their studies.

All coursework—including work submitted for assessment—must be authentic, based on the student's individual and original ideas with the ideas and work of others fully acknowledged. Assessment tasks that require teachers to provide guidance to students or that require students to work collaboratively must be completed in full compliance with the detailed guidelines provided by the IB for the relevant subjects.

For further information on academic honesty in the IB and the Diploma Programme, please consult the IB publications:

- *Academic honesty in the IB educational context*
- *Effective citing and referencing*
- *Diploma Programme: From principles into practice*
- *General regulations: Diploma Programme*.

Specific information regarding academic honesty as it pertains to the extended essay can be found in this guide.

Acknowledging the ideas or work of another person

Coordinators, teachers and supervisors are reminded that students must acknowledge all sources used in work submitted for assessment. The following is intended as a clarification of this requirement.

Diploma Programme students submit work for assessment in a variety of media that may include audio-visual material, text, graphs, images and/or data published in print or electronic sources. If students use the work or ideas of another person, they must acknowledge the source using a standard style of referencing in a consistent manner. A student's failure to acknowledge a source will be investigated by the IB as a potential breach of regulations that may result in a penalty imposed by the IB final award committee.

The IB does not prescribe which style(s) of referencing or in-text citation should be used by students; this is left to the discretion of appropriate faculty/staff in the student's school. The wide range of subjects, response languages and the diversity of referencing styles make it impractical and restrictive to insist on particular styles. In practice, certain styles may prove most commonly used, but schools are free to choose a style that is appropriate for the subject concerned and the language in which students' work is written.

The following criteria must be applied.

- Students are expected to use a standard style and use it consistently so that credit is given to all sources used, including sources that have been paraphrased or summarized.
- When writing, students must clearly distinguish (in the body of the text) between their words and those of others by the use of quotation marks (or other method like indentation) followed by an appropriate citation that denotes an entry in the bibliography.
- Students are not expected to show faultless expertise in referencing, but are expected to demonstrate that all sources have been acknowledged.
- Students must be advised that any audio-visual material, text, graphs, images and/or data that is crucial to their work and that is not their own must also attribute the source. Again, an appropriate style of referencing/citation must be used.
- Regardless of the reference style adopted by the school for a given subject, it is expected that the minimum information given includes:
    - name of author
    - date of publication
    - title of source
    - page numbers as applicable
    - date of access (electronic sources).

Learning diversity and learning support requirements

Schools must ensure that equal access arrangements and reasonable adjustments are provided to students with learning support requirements in line with the IB documents:

- *Candidates with assessment access requirements*
- *Learning diversity within the International Baccalaureate programmes: Special educational needs within the International Baccalaureate programmes*.

Overview of the extended essay

- The extended essay at a glance
- Prior learning
- The nature of the extended essay
- Engaging with sensitive topics
- Policies relevant to the extended essay
- Aims
- Assessment objectives
- Reflection in the core
- Reflection in the extended essay

The extended essay at a glance

The extended essay is an in-depth study of a focused topic chosen from the list of available Diploma Programme subjects for the session in question. This is normally one of the student's six chosen subjects for those taking the IB diploma, or a subject that a course student has a background in. It is intended to promote academic research and writing skills, providing students with an opportunity to engage in personal research in a topic of their own choice, under the guidance of a supervisor (an appropriately qualified member of staff within 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 mandatory that all students undertake three reflection sessions with their supervisor, which includes a short, concluding interview, or *viva voce*, with their supervisor following the completion of the extended essay. An assessment of this reflection process is made under criterion E (Engagement) using the *Reflections on planning and progress form*.

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

Key features of the extended essay

- The extended essay is compulsory for all students taking the Diploma Programme and is an option for course students.
- A student must achieve a D grade or higher to be awarded the Diploma.
- The extended essay is 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.
- The extended essay process helps prepare students for success at university and in other pathways beyond the Diploma Programme.
- When choosing a subject for the extended essay, students must consult the list of available Diploma Programme subjects published in the *Handbook of procedures for the Diploma Programme* for the session in question.
- The extended essay is a piece of independent research on a topic chosen by the student in consultation with a supervisor in the school.
- It is presented as a formal piece of sustained academic writing containing no more than 4,000 words accompanied by a reflection form of no more than 500 words.
- It is the result of approximately 40 hours of work by the student.
- Students are supported by a supervision process recommended to be 3–5 hours, which includes three mandatory reflection sessions.
- The third and final mandatory reflection session is the *viva voce*, which is a concluding interview with the supervising teacher.

Prior learning

The extended essay is a unique task for all students, both those who are studying for the full IB diploma and course students who choose it as an option. While no particular background is formally required to undertake the extended essay, students are strongly recommended to carry out research in a subject area they are currently studying in the Diploma Programme to ensure that they have sufficient subject knowledge to complete the task. If a student has a background in the subject that is not from their Diploma Programme studies, the student must ensure that they are familiar with the subject from a Diploma Programme perspective.

For those students completing a world studies extended essay, it is strongly recommended that they are undertaking a course of study in at least one of the subjects chosen for their essay. A familiarity with research methods would be an advantage; however, when students begin the extended essay, part of the process is to develop an understanding of the methodology most appropriate for the research area within the chosen subject. Developing this understanding will be undertaken with the support and guidance of their supervisor, Diploma Programme and/or extended essay coordinator and librarian.

The nature of the extended essay

The extended essay is a unique opportunity for students to explore an academic area in which they have a personal interest. This takes the form of an independently written research paper that allows students to demonstrate their passion, enthusiasm, intellectual initiative and/or creative approach for their chosen topic. Such topics can range from focused, in-depth analyses of specific elements of a subject to critically evaluating responses to issues of global significance in the case of the world studies extended essay. Students develop important transferable skills such as research, critical thinking, and self-management, which are communicated in the form of an academic piece of writing. Emphasis is placed on engagement and reflection on the research process, highlighting the journey the student has made on an intellectual and personal level and how it has changed them as a learner and affected the final essay.

Students complete an extended essay in a specific discipline or in one of the interdisciplinary options available. In a disciplinary essay students must demonstrate their knowledge and understanding of the theories, tools and techniques of a specific discipline explored through a topic of their choice. Students who choose a world studies extended essay must demonstrate how their understanding of an issue of contemporary global significance is enhanced by taking an interdisciplinary approach.

An important aim of the extended essay, as part of the Diploma Programme core is to support and be supported by the academic disciplines. Whichever subject is chosen, the extended essay is concerned with exploring a specific research question through interpreting and evaluating evidence, and constructing reasoned arguments. In undertaking the extended essay students model many of the elements of academic research by locating their topic within a broader disciplinary context, or issue in the case of a world studies extended essay, justifying the relevance of their research and critically evaluating the overall strength of the arguments made and sources used. Guided through this process by a supervisor, students are encouraged to reflect on insights gained, evaluate decisions, and respond to challenges encountered during the research.

Embedded within the process of writing the extended essay are many elements of the *approaches to learning* (ATL). While research skills are fundamental to successful completion, other ATL skills are implicit in the task. As the extended essay is an independent task, it requires students to self-manage by developing organization and affective skills, including mindfulness, perseverance, resilience and self-motivation. The process of researching and writing the extended essay represents the learner profile in action. Being open-minded, principled and reflective are aspects of the student experience within the extended essay. The extended essay provides students with the opportunity to become more internationally minded by engaging with the local and global communities on topics of personal inquiry. The development of the learner profile attributes help to unify IB learners in a larger community in this shared experience.

The extended essay is a challenging and rewarding experience, which prepares students for different pathways beyond the Diploma Programme by developing skills valued by both tertiary education and employers. The extended essay embodies the essence of an IB education in developing inquiring, critical, lifelong learners.

Engaging with sensitive topics

Undertaking an extended essay provides students an opportunity to engage with interesting, stimulating and personally relevant topics and issues. However, it should be noted that often such topics and issues can also be sensitive and personally challenging. Diploma Programme and/or extended essay coordinators and supervisors should be aware of this and provide guidance to students on how to approach and engage with such topics and issues in a responsible manner. The IB's ethical guidelines should be consulted.

Policies relevant to the extended essay

All students undertaking an extended essay must be aware of and read the relevant policies related to *ethical guidelines* for carrying out research and those relating to academic honesty. Additionally, students must ensure that they follow the policies related to specific subject areas, such as in the sciences, psychology, and social and cultural anthropology. In the sciences, this refers specifically to the animal experimentation policy, and in psychology and social and cultural anthropology it refers to ethical guidelines for undertaking research.

Aims

The aims of the extended essay are for students to:

- engage in independent research with intellectual initiative and rigour
- develop research, thinking, self-management and communication skills
- reflect on what has been learned throughout the research and writing process.

Assessment objectives

In working on the extended essay, students are expected to achieve the following assessment objectives.

Assessment objectives	
Knowledge and understanding	• To demonstrate knowledge and understanding of the topic chosen and the research question posed. • To demonstrate knowledge and understanding of subject specific terminology and/or concepts. • To demonstrate knowledge and understanding of relevant and/or appropriate research sources and/or methods used to gather information.
Application and analysis	• To select and apply research that is relevant and appropriate to the research question. • To analyse the research effectively and focus on the research question.
Synthesis and evaluation	• To be able to discuss the research in terms of a clear and coherent reasoned argument in relation to the research question. • To be able to critically evaluate the arguments presented in the essay. • To be able to reflect on and evaluate the research process.
A variety of (research) skills	• To be able to present information in an appropriate academic format. • To understand and demonstrate academic integrity.

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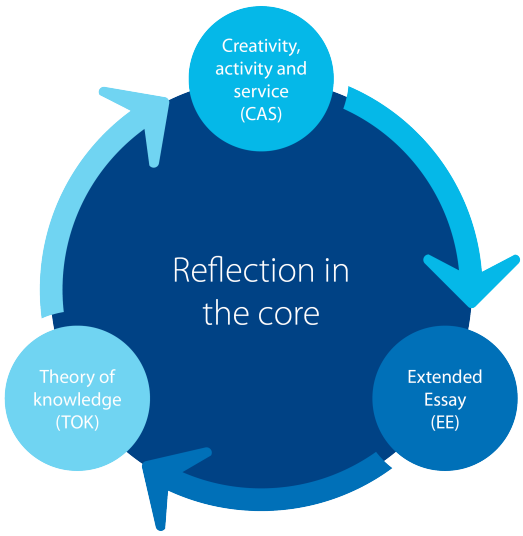
Reflection in the core

Being reflective is one attribute of the IB learner profile: "We thoughtfully consider the world and our own ideas and experience. We work to understand our strengths and weaknesses in order to support our learning and personal development."



Reflection in CAS:

Creativity, activity and service (CAS)

- Reflection is central to building a deep and rich experience of CAS. Students explore their own actions and reflect on their personal growth.
- The emphasis in CAS is on **affective** reflection, characterized by reflecting on attitudes, feelings, values, principles, motivation, emotions and self-development.
- Students will be encouraged to informally reflect on their CAS experiences throughout the CAS programme, but are required to reflect formally when developing a CAS portfolio.

Reflection in TOK:

Theory of knowledge (TOK)

- TOK is about reflecting on the nature of knowledge. Students are encouraged to reflect on how knowledge is constructed as well as the commonalities and differences in their subject areas.
- The emphasis in TOK is on **critical** reflection, characterized by reflecting on metacognition, evaluation, justification, arguments, claims and counterclaims, underlying assumptions and different perspectives.
- Students will be encouraged to informally reflect on their engagement with knowledge throughout the course, but are required to reflect formally as part of the TOK essay and the TOK presentation.

Reflection in the extended essay:

Extended Essay (EE)

- Reflection in the extended essay focuses on the student's progress during the planning, research and writing process. It is intende to help students with the development of their extended essay as well as allowing them the opportunity to consider the effectiveness of their choices, to re-examine their ideas and to decide whether changes are needed.
- The emphasis in the extended essay is on **process** reflection, characterized by reflecting on conceptual understandings, decision-making, engagement with data, the research process, time management, methodology, successes and challenges, and the appropriateness of sources.
- Students will be encouraged to informally reflect throughout the experience of researching and writing the extended essay, but are required to reflect formally during the reflection sessions with their supervisor and when completing the Reflections on planning and progress form.

Reflection in the extended essay

Student reflection in the extended essay is a critical evaluation of the decision-making process. It demonstrates the evolution and discovery of conceptual understandings as they relate to the research question and sources. Reflection demonstrates the rationale for decisions made and the skills and understandings developed, as well as the authenticity and intellectual initiative of the student voice. Effective reflection highlights the journey the student has taken to engage in an intellectual and personal process as well as how it has changed him or her as a learner and affected the final essay.

As a part of the extended essay, students will be expected to show evidence of intellectual growth, critical and personal development, intellectual initiative and creativity. This should be facilitated by the use of the Researcher's reflection space. The most successful students will be able to show an appreciation that learning is complex and that they are able to consider their actions and ideas in response to setbacks that they may experience during the research process.

The depth of reflection will demonstrate that the student has constructively engaged with the learning process. Such engagement provides evidence that the student has grown as a learner as a result of his or her experience. More importantly, it demonstrates the skills that have been learned.

These skills may include:

- critical thinking
- decision-making
- general research
- planning
- referencing and citations
- specific research methodology
- time management.

Reflection must be documented on the *Reflections on planning and progress form* and is explicitly assessed under assessment criterion E (engagement).

Supporting the extended essay

- Administrative requirements of the extended essay
  - the requirements for the school
  - the requirements for the Diploma Programme/extended essay coordinator
  - the requirements for the supervisor
  - the requirements for the student
- Pedagogical support for the extended essay
  - recommendations for the school
  - recommendations for the Diploma Programme/extended essay coordinator
  - recommendations for the supervisor
  - recommendations for the student
- Role of the librarian
- Important note on the role of external mentors
- The researcher's reflection space

Administrative requirements of the extended essay

The following sections outline the administrative requirements of the extended essay for:

- the school
- the Diploma Programme and/or extended essay coordinator
- the supervisor
- the student.

	Required action
School	• Ensure that the Diploma Programme and/or extended essay coordinator understands who can and cannot be a supervisor. • Provide organizational structures that allow for three mandatory reflection sessions with the supervisor.

	Required action
Diploma Programme/ extended essay coordinator	• Ensure that extended essays conform to the regulations outlined in the *Handbook of procedures for the Diploma Programme.* • Ensure that students select the subject for their extended essays from the list of available subjects for the May or November session in question (in the *Handbook of procedures for the Diploma Programme*) before choosing a topic. • Ensure that each student has an appropriately qualified supervisor, who is a teacher within the school. • Introduce, explain and support the reflection process. • Provide supervisors and students with the general and subject-specific information and guidelines for the extended essay contained in this guide and the accompanying teacher support material. • Ensure that the *Reflections on planning and progress form* (RPPF) is completed and signed by the student and supervisor and submitted to the IB with the essay for assessment under criterion E by the deadline stated in the *Handbook of procedures for the Diploma Programme*. • Provide exemplars of extended essays to supervisors and students. • Ensure that supervisors and students are familiar with the IB documents *Academic honesty in the IB educational context* and *Effective citing and referencing*. • Explain to students the importance of the extended essay in the overall context of the Diploma Programme, including the requirement to achieve a D grade or higher in order to be awarded the Diploma. • Explain to students that they will be expected to spend up to 40 hours on their extended essay.

	Required action
Supervisor	• Undertake three mandatory reflection sessions with the student. • Ensure that students complete the *Reflections on planning and progress form*, and sign and date the form after each entry by the student. • Provide an explanation in cases where the number of hours spent with the student in discussing the extended essay is less than the recommended minimum of three hours; in particular, it is necessary to describe how it has been possible to guarantee the authenticity of the essay in such circumstances. • Write a report and present it to the school's Diploma Programme coordinator if academic misconduct such as plagiarism is suspected in the final draft.

	Required action
Student	• Choose a subject from the available extended essay list. See Diploma Programme coordinator or extended essay coordinator for details. • Ensure that the starting point for your essay is a subject that is available, or in the case of the world studies extended essay, an issue of global significance within one of the six world studies themes. • Observe the regulations with regard to the extended essay, including the IB's *ethical guidelines.* • Read and understand the subject-specific requirements for the subject in which you intend to complete your extended essay, including the interpretation of the assessment criteria. • Meet all internal deadlines set by your school in relation to the extended essay. • Understand concepts related to academic honesty, including plagiarism and collusion, for example, and ensure that you have acknowledged all sources of information and ideas in a consistent manner. This also includes understanding the implications of the *General regulations: Diploma Programme* should there be a breach of these. • Attend three mandatory reflection sessions with your supervisor, the last of which is the *viva voce*. • Record your reflections on the *Reflections on planning and progress form* for submission as part of the assessment of criterion E (engagement).

Pedagogical support for the extended essay

The following sections provide recommendations for how schools, Diploma Programme/extended essay coordinators and supervisors should support the extended essay research and writing process. The guidance is a reflection of what the IB would consider to be good practice in the implementation and organization of the extended essay.

Recommendations are made in relation to:

- the school
- the Diploma Programme/extended essay coordinator
- the supervisor
- the student

The school

Before the supervisor and student meet for their one-to-one sessions, there is much that a school can do to prepare students and supervisors for the research and writing process and this preparation is **strongly recommended**. The following suggestions are not meant to be exhaustive:

- Provide training sessions for supervisors run by the extended essay or Diploma Programme coordinator and/or experienced supervisors.
- Facilitate special sessions for students on how to approach research for the extended essay, including use of the internet. The librarian may be best placed to do this with students.
- Support the development of courses on citing and referencing. Supervisors and students must be familiar with the IB documents on this.
- Provide or recommend study skills sessions for students on note-taking and structuring essays.
- Provide or recommend guidance on research methodologies relevant and appropriate to the subject (for example, questionnaire design and interview techniques).
- Support the outline of key milestones, such as internal deadlines.

The advantage of the above approach is that it avoids duplication of effort on the part of the supervisors and it does not have to be covered in the three to five hours recommended for the one-to-one meetings between the supervisor and the student.

Quick glance: role of the school

Do:	Do not:
encourage teachers to assume the role of supervisor for a subject in which they have an appropriate background	unnecessarily remove the range of choice a student has in terms of subjects available
provide training for staff on the role of the supervisor so that the role is undertaken effectively and consistently regardless of supervisor	overlook the time commitment of the role of a supervisor; this varies depending on the number of students a supervisor is allocated

highlight the importance within the school community of internal deadlines	overlook the training of supervisors; it is an official role with which potential supervisors should be familiarized and given the opportunity to raise questions and concerns in the correct training forum
facilitate classes on referencing, research methodologies and the concept of ethical practice in research.	rely on the 3–5 hours of individual student supervision time to address key skills.

Diploma Programme/extended essay coordinator

The Diploma Programme/extended essay coordinator plays an important role in implementing and managing the extended essay research and writing process. As a pedagogical leader the coordinator will set the tone for how the extended essay is undertaken and how students and supervisors engage with the process.

The following suggestions are not meant to be exhaustive:

- Ensure that students are taught the necessary research skills, including those related to academic honesty and technology literacy, which refers to the ability to access and use technology responsibly. This includes accessing and using electronically based sources.
- Support the introduction and use of the Researcher's reflection space as an integral part of the extended essay process.
- Limit the number of students allocated to each supervisor to ensure the appropriate level of supervision can be provided for each student.
- Provide appropriate training and ongoing support for supervisors.

Quick glance: the role of the Diploma Programme/extended essay coordinator

Do:	Do not:
ensure a sufficient number of supervisors are available per examination session	allocate too many students to each supervisor
develop training programmes for supervisors to encourage more staff members to take on this valuable role	discourage students from taking certain subjects without reason
highlight the importance of the Researcher's reflection space	rely on supervisors to ensure that students have all the necessary key skills, such as referencing or research methodologies.
ensure that policies such as the academic honesty policy are fully embedded into the preparation of students for the extended essay	
make online curriculum centre resources available to supervisors, such as extended essay exemplars and subject reports	
monitor the correct completion of the *Reflections on planning and progress form*.	

The supervisor

The supervisor–student working relationship is probably the most important one in the extended essay process. The supervisor must be a suitably qualified member of staff at the school in which the student is registered.

The supervisor plays an important role in helping students to plan and undertake their research for the extended essay. The relationship should be an active two-way process with the supervisor primarily there to support and guide the student, during the supervision and reflection sessions, at the planning stage, and when the student is carrying out and writing up their research. This is done through the supervision process, including the three mandatory reflection sessions and the completion of the *Reflections on planning and progress form*.

It is the responsibility of the supervisor to ensure that students are familiar with the requirements of the extended essay. Supervisors and students must discuss:

- the nature of the extended essay
- their chosen subject, topic and research question
- the most appropriate research methods to be used given the subject for which the student is submitting their essay
- the formal requirements for the completion of the task.

Students should be encouraged to initiate discussions with their supervisor to obtain advice and information and the role of the supervisor should be explained to them so that there is a shared understanding of expectations and responsibilities. Supervisors must ensure that they understand the important role they play in supporting students in this process. However, if a student could not have completed the work without substantial support from their supervisor, this should be reported to the Diploma Programme/extended essay coordinator, who in turn must record the details on the appropriate form. Additionally, if the student has received substantial support from a teacher but has not declared this, then this too must be recorded in the summative comment made by the supervisor on the *Reflections on planning and progress form*. If academic misconduct is suspected, supervisors must report this to the Diploma Programme/extended essay coordinator initially.

Supervisors are **required** to:

- undertake three mandatory reflection sessions with each student they are supervising
- sign and date each reflection summarized on the *Reflections on planning and progress form* and provide comments at the end of the process. If the form is not signed by both the student and the supervisor, it may result in:
    - a delay in a grade being issued for the extended essay
    - criterion E (engagement) being compromised—the examiner may not be able to apply criterion E due to missing or lacking information

    - the essay being referred as a possible case of academic misconduct as a result of not being authenticated
- provide students with advice and guidance in the skills of undertaking research
- encourage and support students throughout the research and writing of the extended essay
- discuss the choice of topic with each student and, in particular, help to formulate a well-focused research question which is suitable to the subject of registration and ensure 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 students
- monitor 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)
- read and comment on one draft only of the extended essay (but do **not** edit the draft); this should take place after the interim reflection session, but before the final reflection session, the *viva voce*
- ensure that the final version of the essay is handed in before the final reflection session (*viva voce*) takes place, and that no changes are made to it subsequently
- read the final version and, in conjunction with the *viva voce*, confirm its authenticity.

The student may work with or consult external experts in a particular area of specialism but it remains the responsibility of the supervisor within the school to complete all the requirements described above. See the section on the role of external mentors.

Supervisors are **strongly** recommended to:

- read recent extended essay reports for the subject
- spend between three and five hours with each student, including the time spent on the three mandatory reflection sessions
- encourage the development of a Researcher's reflection space for students
- set a clear schedule for the reflection sessions
- ensure that the chosen research question is appropriate for the subject
- advise students on:
    - access to appropriate resources (such as people, a library, a laboratory)
    - research methods
    - how to cite and reference.

The following resources might be helpful in supporting the supervision and reflection process:
Pedagogical support for the EE

Quick glance: the role of the supervisor

Do:	Do not:

ensure you feel prepared to undertake the role of the supervisor	overlook the role or give it insufficient time
help students to arrive at a focused research question which is feasible within the scope of the task, time available, and the student's ability	use the reflections or check-in sessions to address key skills such as research methodology and referencing; instead, speak to your Diploma Programme/extended essay coordinator about more effective cohort-wide provision.
emphasize the importance of the reflection sessions as supported by a detailed Researcher's reflection space	
ensure that students are given copies of relevant publications available on the OCC, such as policies, exemplars and subject reports	
ensure you are fully familiar with both the assessment requirements of the subject you are supervising as detailed in the relevant chapter of the *Extended essay guide*, as well as the generic requirements	
monitor the progress of the students and encourage them to develop skills relevant to their research and writing	
comment fully on one draft of the extended essay within the parameters permitted	
ensure adequate availability to students for check-in and reflection sessions.	

The student

As the extended essay is an important component of the Diploma Programme, and a substantial piece of work, students need to ensure that they understand the expectations of the task and manage their time and workload effectively. The following suggestions are given as guidance to help with the process.

Students are **strongly** recommended to:

- develop a Researcher's reflection space as a planning tool
- use the Researcher's reflection space to prepare for reflection sessions
- share excerpts from the Researcher's reflection space with the supervisor during the reflection sessions
- choose a subject, followed by a topic, and then think carefully about the research question for their essay
- plan how, when and where they will find material and sources for their essay before deciding on the final topic and research question
- plan a schedule for both the researching and writing of their extended essay, including extra time for delays and unforeseen problems
- record sources as their research progresses using their Researcher's reflection space rather than trying to reconstruct a list at the end
- make the most of their supervision and reflection sessions by arriving prepared to discuss their work
- have a clear structure for the essay before beginning to write

- check and proofread the final version of their extended essay
- make sure that the version they submit for assessment is the final version with all sources correctly and consistently referenced
- ensure that all requirements are met.

Quick glance: the role of the student

Do:	Do not:
choose a subject and then topic that interests you and allows you to develop and demonstrate your understanding, creativity and/or originality	choose a topic or research question that you have seen in exemplars and that have been done too many times before
develop a Researcher's reflection space that will facilitate planning and preparation for reflection sessions	overlook the importance of planning and how this can contribute to success in your extended essay
make the most of your supervisor's availability to guide you in the process	try to construct a list of references at the end of the process—be aware of the implications of poor/inadequate referencing.
prepare for reflection sessions appropriately	
meet all internal deadlines	
maintain a reference list as you work	
familiarize yourself with relevant policies.	

The role of the librarian

Overview of the librarian's role

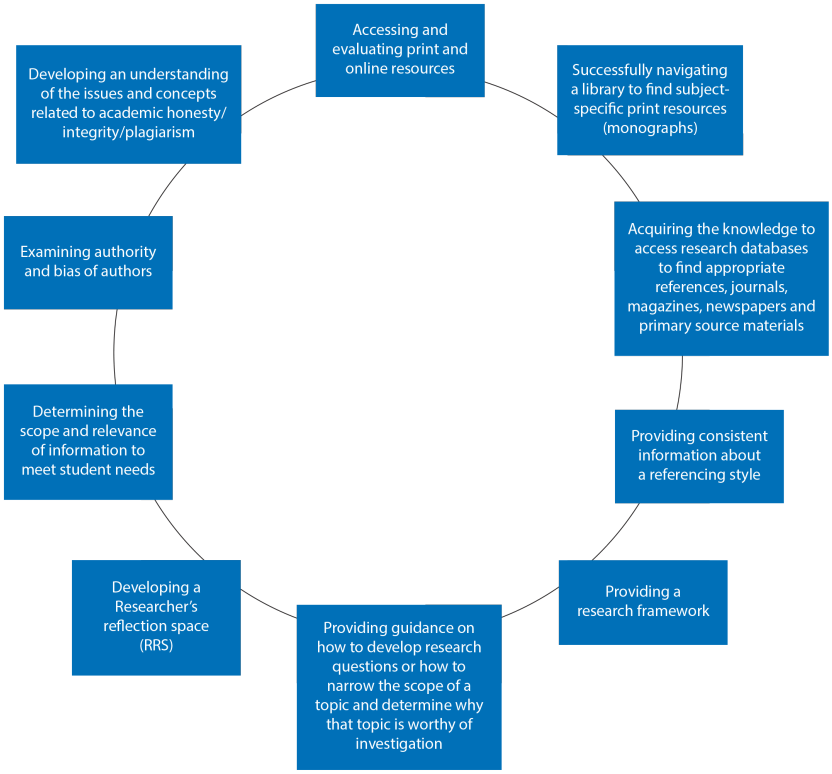
Librarians are uniquely positioned to play an important and effective role in the extended essay process. As interdisciplinary educators they are able to work across subject areas to help students become lifelong learners through inquiring, gaining and creating new knowledge, and pursuing personal interests. With the necessary educational background and training they are able to support students in the development of information literacy and research skills. Students are often overwhelmed at the amount of unfiltered information available to them, so they need to develop the skills to be able to raise questions and evaluate the authenticity, validity and reliability of sources. Utilising the knowledge and skills of a school librarian will help students to navigate and plan their extended essay more effectively and to become independent researchers.

In order to prepare students to be successful in the extended essay process, librarians can help to lay the foundations for the development of research skills. Ideally, some of these skills will have already been developed several years before the extended essay process, thus giving students a chance to demonstrate their learning. However, in situations where the concept of research is new to students, librarians have an invaluable role to play. The school librarian can provide leadership and expertise in the selection, acquisition, evaluation, and organization of information resources and technologies in all formats, as well as expertise in the ethical use of information. These are all important concepts and practices students need to understand.

Support for the extended essay

One of the best resources any school has to support the extended essay is the school library and librarian. In order to support the extended essay, a school may decide that the librarian is best placed to provide training in some of the fundamental research and information literacy skills. Working closely with Diploma Programme/extended essay coordinator and supervisors, librarians can provide important and additional support in the development of these skills.

These skills can include:



Some schools might consider using the school librarian as the extended essay coordinator as the extended essay process and the concept of an investigation may be well suited to a school librarian's educational background. The librarian can help with the creation of an internal extended essay timeline in conjunction with Diploma Programme teachers and the Diploma Programme coordinator. This timeline should take into account all the major internal and external IB assessments, along with other major tests and school requirements. Schools should determine how their librarian might best support the Diploma Programme/extended essay coordinator and supervisors in guiding students through the extended essay process.

The librarian can also create partnerships with local public and university libraries to allow Diploma Programme students access to resources outside of the school for the extended essay process. The school librarian can work with the Diploma Programme/extended essay coordinator or head of school to come up with creative solutions to help students with their first major independent research project.

If the librarian is to play a role in the extended essay process it is advisable that they be formally trained in the extended essay at a Category 3 workshop. A working knowledge of the general and subject-specific guidelines must be understood so that they can provide the support that students may need. The librarian may also choose to utilize a course management system to set up a structure for the school in order to facilitate the successful implementation of the extended essay. A system such as this will be of benefit to both supervisors and students who will need access to the guidelines along with instructions on how to access all the resources needed for the extended essay.

Librarians are permitted to act as supervisors for the extended essay if they are appropriately qualified.

Quick glance: the role of the librarian

Do:	Do not:
• oversee the scheduling of the extended essay process • offer lessons and workshops in information literacy and research skills • build partnerships with public and university libraries • act as a supervisor for extended essay students, if appropriately qualified • support students in terms of accessing adequate print and online sources • help train students and teachers on using the extended essay guidelines and information • provide guidance to students on how to format a formal essay using word processing software • support and provide guidance to students on how to develop the Researcher's reflection space • provide training and support on the concept of academic honesty, including an introduction to how to cite correctly and consistently.	• comment on any part of the essay if they are not the supervisor • propose or revise research questions • undertake searches for information on behalf of students beyond guiding them on how to use search systems • provide a pre-formatted template for the extended essay • correct bibliographies or citations.

Important note on the role of external mentors

Ideally, students should carry out the research for the essay solely under the direction of a school supervisor and within the school. However, in circumstances where the school deems it appropriate, students may undertake their research at an institute or university under the guidance of an external mentor. This must be with the agreement of the school, and the external mentor must be provided with a letter outlining the nature of the extended essay and clear instructions about the level of guidance that is permitted. Schools are responsible for ensuring that these external mentors are aware of the limits of their role in providing this service. It is important to note that if this is the case the student **must** be allocated a supervisor within the school and undertake his or her reflection sessions with this person. Only a supervisor within the school is permitted to complete the reflection process for the extended essay with the student and provide both signature and comments on the *Reflections on planning and progress form* (RPPF). The nature of these comments may be informed by the external mentor but must **not** be provided by them. For further clarification please see the accompanying teacher support material.

The letter, which must be electronically signed by the external mentor, must be inserted in the appendix of the essay as part of the document file rather than as a scanned document. If a student has had an external mentor, this signed letter is an important part of the authentication of the essay.

As the extended essay is an independent task and a formal assessment component, students must not receive assistance with any aspect of the research, writing or proofreading of the extended essay beyond that which is permitted through their supervisor. If a supervisor suspects that the extended essay submitted for assessment by a student could not have been completed without assistance they are required to bring this to the attention of the Diploma Programme/extended essay coordinator, who in turn must inform the IB. This may then be investigated as a possible case of academic misconduct.

Researcher's reflection space

Student reflection in the extended essay is critical. Effective reflection highlights the engagement of the student in an intellectual and personal process and how this has changed the student as a learner and affected the completion of that individual's essay. For those students who have completed the Middle Years Programme, the researcher's reflection space (RRS) can be compared to the process journal. The IB considers this to be a central component of a successful research process as it:

- supports student learning, thinking and critical analysis throughout the research process
- helps to stimulate discussions between the student and supervisor
- aids the reflection process.

The nature of the RRS

Use of the RRS is strongly recommended as it will allow the student to more clearly articulate and understand their decision-making process. It supports learning, thinking, critical analysis and evaluation, and contributes not only to the development of a successful extended essay but also to skills and competencies for pathways beyond the Diploma Programme.

The RRS is a personal learning environment that can be either a physical or virtual support tool. It is a space in which students are able to record reflections on what they are reading, writing and thinking. The use of the RRS will help students to prepare for their reflection sessions with their supervisors and inform the discussions that take place. In preparing for their reflection sessions students could use their RRS to:

- record their reflections
- respond to artefacts, such as photos, newspaper clippings, twitter feeds, blogs, and so on
- respond to prompts and questions that may arise in the students' subject areas, TOK classes or other aspects of the Diploma Programme
- create MindMaps®;
- record emerging questions.

The idea of the RRS is not new and many students already keep research journals in the planning, researching and writing phases of their work on the extended essay. Encouraging students to develop a RRS will provide benefits in terms of the management of their workload and focus on their extended essay.

The role of the RRS

Created by students to support their engagement in the planning and decision-making process, the RRS helps to develop critical and evaluative thinking skills. It is also a planning tool that helps to scaffold the development of approaches to learning skills and conceptual understandings that occur throughout the research process. Additionally, the RRS tracks the evolution of thought as it relates to the development of an argument. It helps the student to personally connect to the topic and may motivate them in

meaningful ways to successfully complete the extended essay. Finally, supervisors will be able to more effectively authenticate the student voice in that the RRS links directly to elements that will eventually be found in the essay itself. The RRS is intended to make the entire supervision process more meaningful.

Insights and information recorded in the RRS are expected to form the basis for and find direct expression in the essay, reflection sessions and *Reflections on planning and progress form*. Students are expected to share excerpts from the RRS in discussions with their supervisor. Using these reflections as a point of reference in their supervision sessions, students will be able to:

- demonstrate their planning
- discuss what they are learning
- evaluate their progress.

The student–supervisor relationship

Students can use the RRS to prepare for their reflection sessions with their supervisors.

Reflection session	Description
The first reflection session	Students are encouraged to include in their RRS examples of initial topic exploration, possible sources and methods, preliminary research questions and their personal reactions to the issues. In attending their first reflection session with their supervisor, students can use notes made in the RRS as the basis for discussion as well as to demonstrate the progress students have made in the research process.
The interim reflection session	As their RRS develops, students can demonstrate the progress of their thinking, the development of their argument and raise any questions they may have with their supervisor. At this stage the RRS may include reactions to readings, progress in the timeline for completion of the extended essay, a possible outline of arguments, setbacks encountered and the strategies used to overcome them.
The final reflection session—*viva voce*	During the *viva voce*, which takes place at the completion of the extended essay process, the RRS can form the basis for discussion about the process of completing the essay. Students can show what they have learned about the topic, the research process followed, their own learning, as well as outlining new questions they have uncovered. Most importantly, during the *viva voce* the RRS may help to highlight the personal significance of the work to the student and ultimately contribute to the supervisor's report.

Tip

While use of the RRS is not mandated, the IB considers the development of the RRS an essential element of good reflective practice as it will help the student to not only scaffold the extended essay process but also to build skills which transcend the task itself and prepare the student for university study and beyond.

A well-used RRS will aid the reflection sessions students have with their supervisor, as elements of it can be used to stimulate and inform discussion. This will help students to move towards a more evaluative understanding of the research process and the choices they make as part of this.

Finally, the RRS will contribute to a richer and more personally rewarding experience with the extended essay overall.

Introducing students to the extended essay

Overview

The following sections offer guidance on how the extended essay process can be supported for students. It includes the following:

- Introducing students to the extended essay
- The supervision process
- Distinguishing between a supervision session and a reflection session
- Supporting the mandatory reflection sessions
- Preparation for the first reflection session
- First formal reflection session
- Preparation for the interim reflection session
- The interim reflection session
- Accommodating a change of direction
- Commenting on a draft version of the extended essay
- Submission requirements
- Preparation for the final reflection session (*viva voce*)
- Final reflection session (*viva voce*)
- Authenticating student work
- Protocols for completing and submitting the *Reflections on planning and progress form*

Introducing students to the extended essay

Before embarking on the extended essay, it is important for students to understand:

- the nature and aims of the extended essay, including the requirements
- how the extended essay is implemented in their school
- the different stakeholders involved, and their respective responsibilities
- the extended essay's place in the core and Diploma Programme
- what is expected from the task.

It is the responsibility of schools and Diploma Programme/extended essay coordinator to ensure that students are familiar with the above, and to introduce concepts such as research methods, academic honesty and technology literacy (using technology responsibly, specifically in this instance when accessing and using internet based sources of information).

Students should also be introduced to the Researcher's reflection space which will facilitate the planning and monitoring of their progress throughout the research process.

The supervision process

In order for students to be successful in the completion of the extended essay, the process needs to be structured and must incorporate a supervision process of 3–5 recommended hours to include three formal reflection sessions between the student and the supervisor as well as supervision sessions called check-in sessions.

The recording of reflections on the *Reflections on planning and progress form* is mandatory and must be submitted with the completed extended essay for assessment under criterion E (engagement). To prepare for these sessions and ensure that they are meaningful and purposeful, the student needs to undertake a number of preparatory steps which are outlined in the following section.

Distinguishing between a supervision session and a reflection session

To support students through the process of undertaking independent research they must be allocated an appropriate supervisor.

Check-in sessions

Students are encouraged to meet with their supervisor in between (and in addition to) the formal reflection sessions. Supervision time should meet the needs of the individual student; therefore, the frequency and duration of these meetings will depend on the needs of the student and the supervisor's requirements. Supervision time may consist of an occasional 10-minute check-in to discuss a timeline or clarification of a comment made by the supervisor. It may also include a more lengthy discussion about particular issues, for example, regarding access to resources. These supervision sessions do not form part of the formal reflection process and do not, therefore, need to be reported on the *Reflections on planning and progress form*. However, they nevertheless form an important part of the supervision process.

Formal reflection sessions

These are the mandatory sessions that must be recorded on the *Reflections on planning and progress form*. It is recommended that these sessions last 20–30 minutes. During these sessions students should share excerpts from their Researcher's reflection space with their supervisor. These sessions should focus on progress made so far and set clear objectives for moving forward in the research process. Students should be prepared for these sessions and the meetings should be a dialogue guided by questions posed by the supervisor. Examples of these are given in the document *Guiding student reflection*.

Supporting the mandatory reflection sessions

There are three mandatory reflection sessions that are a formal part of the extended essay and should be recorded on the *Reflections on planning and progress form*. Following each session, students are required to complete the relevant comment section on the form and submit it to their supervisor. The supervisor must then sign and date the form and after the final reflection session, the *viva voce*, add their own comment. For more information on the protocols for completing and submitting the *Reflections on planning and progress form* please refer to the section "Protocols on completing and submitting the *Reflections on planning and progress form*".

Following the completion of all three sessions, the form will be submitted to the International Baccalaureate along with the completed extended essay. An incomplete form will impact the examiner's ability to apply assessment criterion E (engagement) and will result in the student receiving a lower mark for this criterion.

Reflection sessions

The following sections provide guidance with regard to preparing for and undertaking the three mandatory reflection sessions.

- Preparation for the first reflection session
- First formal reflection session
- Preparation for the interim reflection session
- The interim reflection session
- Accommodating a change of direction
- Commenting on a draft version of the extended essay
- Submission requirements
- Preparation for the final reflection session (*viva voce*)
- Final reflection session (*viva voce*)

Preparation for the first reflection session

As preparation for their first reflection session, students should do the following.

1. Think about subjects and areas of particular personal interest and do some initial background reading into a subject and topic of their choice.
2. Using this as a starting point, explore a variety of possible research topics.
3. Read the subject-specific section of the *Extended essay guide* for the subject they are interested in, paying particular attention to the nature of the subject and the treatment of the topic.
4. Undertake further background reading and begin to gather information around their area of interest. This exploration should give rise to a variety of topics and questions that students can consider for further research. At this stage it is important that students consider the availability of reliable and valid sources for the topic under consideration. All of this should be recorded in their Researcher's reflection space.
5. Begin developing a research proposal which might include a MindMap® of ideas, an annotated article or preliminary bibliography. Additionally, students must already be thinking in terms of the following questions.
   - Is my topic appropriate for the subject I am considering?
   - Why am I interested in this area and why is it important?
   - What possible questions have emerged from my initial reading?
   - Are there any ethical issues that I need to consider?
   - What possible methods or approaches might be used for research in this area and why?

It is recommended at this point that the student–supervisor relationship is formalized and the student can consider himself or herself prepared for the first formal reflection session.

First formal reflection session

This initial reflection session should be a dialogue between the student and the supervisor based on the student's initial explorations. It is recommended that the student sends their supervisor an outline of their research proposal ahead of the meeting in order to give the supervisor the opportunity to review their work. This will ensure that the reflection session is focused and productive.

Topics of discussion that should arise during this session include:

- a review of the requirements and assessment criteria for the subject
- a review of ethical and legal implications, if applicable
- a dialogue about possible approaches and any potential problems that might arise
- a discussion of strategies for developing the student's ideas for the essay and expanding the research so that the essay starts to take form
- probing and challenging questions that will help the student focus their thinking; this should lead to the development of the student's working research question
- an outline of the next steps that the student should undertake in order to refine their question; this should take the form of a research and writing timeline.

Tip

Following this first session, the student is required to complete the first student comment section of the *Reflections on planning and progress form* and submit it to their supervisor who must then sign and date the form. Please refer to the section "Protocols for completing and submitting the *Reflections on planning and progress form*" for more information.

Preparation for the interim reflection session

Between the first and second reflection session, students can engage in informal conversations with other people, such as subject teachers, the extended essay coordinator, the librarian or their supervisor. They must also ensure that they are progressing with their research plan.

In preparation for the interim reflection session, students should have:

- attempted to refine a focused and appropriate research question
- significantly deepened their research and recorded pertinent evidence, information or data in the Researcher's reflection space
- reviewed and consolidated the methodologies they are using
- formulated arguments based on the evidence that they have collected
- added to the working bibliography for their research.

The interim reflection session

This session is a continuation of the dialogue between supervisor and student in which the student must demonstrate the progress they have made in their research. They must also be able to discuss any challenges they have encountered, offer their own potential solutions and seek advice as necessary.

During this session the supervisor might discuss:

- a completed piece of sustained writing from the student in order to ensure that they understand the academic writing requirements, including referencing formats
- whether an appropriate range of sources has been accessed and how the student is critically evaluating the origin of those sources
- what the student now has to do in order to produce the full draft of their essay, and ways and means of breaking down the task into manageable steps.

By the end of the interim reflection session both student and supervisor should feel satisfied that there is:

- a clear and refined research question
- a viable argument on which to base the essay
- a sufficient range of appropriate sources
- a clear vision for the final steps in the writing process.

Between the interim session and the completion of the extended essay, students should continue to see their supervisor as appropriate to their needs, although the third and final reflection session should not take place until after the extended essay has been completed and uploaded for submission.

Tip

Following this interim session, the student is required to complete the second student comment section of the *Reflections on planning and progress form* and submit it to their supervisor who must then sign and date the form. Please refer to the section "Protocols for completing and submitting the *Reflections on planning and progress form*" for more information.

Accommodating a change of direction

If the student or supervisor is not satisfied that the goals of the research are being met, further supervision sessions may be appropriate.

Students who find that they need to change direction in their research or adjust the formulation of their research question should demonstrate the thinking that led them to these decisions in their second reflection on the *Reflections on planning and progress form*. They must not go back and adjust their initial reflections, as the purpose of the form is to demonstrate the evolution of their thinking in the research process.

Commenting on a draft version of the extended essay

Commenting on one completed draft of the essay is a very important aspect of the latter stages in the process, and the last point at which the supervisor sees the essay before it is finally uploaded for submission. It is therefore vital that the level of support given is appropriate—too little support and the ability of the student to meet their potential is compromised; too much help and it will not be the work of an independent learner.

The best way of conducting this last stage is for the student to submit the essay prior to a supervision session to allow the supervisor to add their comments. This should be followed by a one-to-one discussion between the supervisor and the student in which they go through the comments together as these become a starting point for a dialogue about the essay. This advice should be in terms of the way the work could be improved, but this first draft must not be heavily annotated or edited by the supervisor.

What supervisors can do

Comments can be added that indicate that the essay could be improved. These comments should be open-ended and not involve editing the text, for example:

- **Issue:** the research question is expressed differently in three places (the title page, the introduction and the conclusion).

  Comment: is your research question consistent through the essay, including on the title page?
- **Issue:** the essay rambles and the argument is not clear.

  Comment: your essay lacks clarity here. How might you make it clearer?
- **Issue:** the student has made a mistake in their calculations.

  Comment: check this page carefully.
- **Issue:** the student has left out a section of the essay.

  Comment: you are missing something here. What is it? Check the essay against the requirements.
- **Issue:** the essay places something in the appendix that should be in the body of the essay.

  Comment: are you sure this belongs here?
- **Issue:** the conclusion is weak.

  Comment: what is it that you are trying to say here? Have you included all your relevant findings? Have you looked at unanswered questions?
- **Issue:** the essay has an incomplete citation.

  Comment: you need to check this page for accuracy of referencing.

What supervisors cannot do:

- Correct spelling and punctuation.
- Correct experimental work or mathematics.

- Re-write any of the essay.
- Indicate where whole sections of the essay would be better placed.
- Proofread the essay for errors.
- Correct bibliographies or citations.

Tip

If students give their supervisor sections of their extended essay to read, this is permissible but the same section of work should not be looked at repeatedly by the supervisor, nor should it be heavily annotated or edited. Students and supervisors must be clear that only one complete draft of the essay is permitted to be looked at by the supervisor.

Submission requirements

The next version of the essay that the supervisor sees must be the final one. The supervisor gains access to this version once the student has uploaded it onto the e-coursework system. This version of the extended essay must be clean; in other words, it must not contain any comments from the supervisor, or any other person. Once this version has been uploaded to the system by the student they are not permitted to make any further changes to it, unless deemed appropriate by the supervisor because of an administrative error. For this reason, it is important that students are advised to ensure that it meets all formatting and submission requirements before they upload it.

Preparation for the final reflection session *(viva voce)*

Supervisors must have already read the final version of the essay, available to them on the e-coursework system, before this session takes place.

Students should bring the following to this session:

- extracts from their RRS that illustrate how they have grown as learners through the process of reflection
- a willingness to share their personal experience and to discuss the skills and development of conceptual understandings that they have acquired through the completion of the extended essay.

Tip

It is important to note that students must not be allowed to make any changes to their extended essay after this meeting. Once they have uploaded the essay onto the e-coursework system the essay is no longer available to them and no changes are permitted.

Final reflection session *(viva voce)*

The *viva voce* is a short interview between the student and the supervisor, and is the mandatory conclusion to the extended essay process. Students who do not attend the *viva voce* will be disadvantaged under criterion E (engagement) as the *Reflections on planning and progress form* will be incomplete.

The *viva voce* is conducted once the student has uploaded the final version of their extended essay to the IB for assessment. At this point in the process no further changes can be made to the essay. The *viva voce* is a celebration of the completion of the essay and a reflection on what the student has learned from the process.

The *viva voce* is:

- an opportunity to ask the student a variety of open-ended questions to elicit holistic evidence of the student's learning experience.
- an opportunity for the supervisor to confirm the authenticity of the student's ideas and sources
- an opportunity to reflect on successes and difficulties encountered in the research process
- an aid to the supervisor's comments on the *Reflections on planning and progress form*.

The *viva voce* should last 20–30 minutes. This is included in the recommended amount of time a supervisor should spend with the student.

In conducting the *viva voce* and writing their comments on the *Reflections on planning and progress form*, supervisors should bear in mind the following.

- The form is an assessed part of the extended essay. The form must include: comments made by the supervisor that are reflective of the discussions undertaken with the student during their supervision/ reflection sessions; the student's comments; and the supervisor's overall impression of the student's engagement with the research process.
- An incomplete form resulting from supervisors not holding reflection sessions, or students not attending them, could lead to criterion E (engagement) being compromised.
- In assessing criterion E (engagement), examiners will take into account any information given on the form about unusual intellectual inventiveness. This is especially the case if the student is able to demonstrate what has been learned as a result of this process or the skills developed.
- Examiners want to know that students understand any material (which must be properly referenced) that they have included in their essays. 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 comment on this on the *Reflections on planning and progress form*.
- If there appear to be major shortcomings in citations or referencing, the supervisor should investigate thoroughly. No essay should be authenticated if the supervisor believes the student may be guilty of plagiarism or some other form of academic misconduct.

- The comment made by the supervisor 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 begin and end positively. Completion of a major piece of work such as the extended essay is a great achievement for students.

Tip

Following this final session, the student is required to complete the last student comment section of the *Reflections on planning and progress form*, sign and date it and submit it to their supervisor, who must then add their own comments, sign and date the form. The supervisor must then upload the form into the e-coursework system, confirm the authenticity of both the form and essay, and submit them to the IB for assessment as one portfolio. Please refer to the section "Protocols for completing and submitting the *Reflections on planning and progress form*" for more information.

Failure to complete or sign the *Reflections on planning and progress form* may result in:

- a delay in a grade being issued for the extended essay
- criterion E being compromised; in other words, the examiner may not be able to apply criterion E due to missing or lacking information
- the essay being referred as a possible case of academic misconduct as a result of not being authenticated.

Authenticating student work

All extended essays submitted to the IB for assessment must be authenticated by the student and supervisor, and must not include any known instances of suspected or confirmed academic misconduct. All students and supervisors must confirm the authenticity of the work submitted when uploading work to the e-coursework system. Once a student has uploaded the final version of their extended essay to the e-coursework system for assessment, and confirmed the authenticity of it, it is submitted via the system to their supervisor. At this point the supervisor must not allow any retraction of the essay by the student for modification purposes unless there has been an administrative oversight.

The *Reflections on planning and progress form* is given to the supervisor by the student, signed and dated, and it is the responsibility of the supervisor to upload this to the e-coursework system, add their comment and authenticate it before submitting it to the IB with the already uploaded essay as one portfolio. Further guidance on this is given in the section "Protocols for completing and submitting the *Reflections on planning and progress form*".

It is extremely important that supervisors are able to confirm that they have followed the guidance for monitoring the student's work throughout the process and can, to the best of their knowledge, confirm the authenticity of the work upon final submission (please refer to the *Handbook of procedures for the Diploma Programme*).

If the supervisor is unable to confirm the authenticity of the work this must be brought to the attention of the Diploma Programme coordinator, who in turn should refer to the *Handbook of procedures for the Diploma Programme* for guidance. Work that is submitted but does not comply with the expectations and requirements outlined in this publication will be treated as a case of academic misconduct.

When authenticity is in doubt, the supervisor should first discuss this with the student. In addition, one or more of the following actions may be helpful:

- compare the style of writing with work known to be that of the student
- compare the final submission with the first draft of the written work
- check the references cited by the student and the original sources
- interview the student in the presence of a third party
- use one of the many websites set up to prevent plagiarism.

It is the responsibility of supervisors to ensure that all students understand the basic meaning and significance of concepts relating to academic honesty, especially authenticity and intellectual property. Supervisors must ensure that all student work to be assessed is prepared according to the stated requirements and must explain clearly to students that the extended essay must be entirely their own work.

The same piece of work cannot be submitted to meet the requirements of both the extended essay and a subject-specific assessment component.

For further guidance on this issue and the procedures for confirming authenticity please refer to the *General regulations: Diploma Programme*, as well as the *Handbook of procedures for the Diploma Programme*.

Protocols for completing and submitting the *Reflections on planning and progress form*

Completing the *Reflections on planning and progress form* (RPPF) is a requirement for the submission of the extended essay. It plays an important role in the assessment of the final essay and of the student's engagement with the process of independent research. The following is offered as guidance for the completion and submission of the form.

Diploma Programme/extended essay coordinators, with the support of their school leadership team, must determine a system for the administration of the RPPF that ensures that both students and supervisors have access to it in order to complete the required summative comments. This system also needs to ensure the integrity of the form.

The following steps are offered as guidance:

1. Initial reflection session takes place.
2. Student is given a fixed time period in which to complete their first reflection comment. This time period should be short in order to authentically reflect the discussion that has taken place.
3. Supervisor date stamps and signs to authenticate the student comment. If the forms are stored electronically an electronic signature is permissible.
4. Interim reflection session takes place.
5. Student is given a fixed time period in which to complete their second reflection comment. This time period should be short in order to authentically reflect the discussion that has taken place.
6. Supervisor date stamps and signs to authenticate the student comment. If the forms are stored electronically an electronic signature is permissible.
7. Student uploads and submits the completed and final version of their extended essay into the e-coursework system ready for submission to the supervisor and the IB. Once this is done the essay is no longer available to the student and no changes are permitted.
8. The supervisor reads the essay and then arranges for the final reflection session, the *viva voce*, to take place.
9. The *viva voce* takes place.
10. Students complete their RPPF by adding their final summative comments, sign and date the form before passing it to their supervisor.
11. The supervisor uploads the form on behalf of the student into the e-coursework system and adds their summative comment.
12. The supervisor then submits both the mandatory items—the essay and the RPPF—to the IB for assessment as one portfolio.

Failure to complete or sign the *Reflections on planning and progress form* may result in:

- a delay in a grade being issued for the extended essay
- criterion E (engagement) being compromised; in other words, the examiner may not be able to apply criterion E due to missing or insufficient information

- the essay being referred as a possible case of academic misconduct as a result of not being authenticated.

An important note:

Once students have written their reflection and this has been signed and dated by their supervisor they must not make changes to these comments. Examiners want to see the progression of ideas through the three reflection comments and if students make amendments at a later stage of the process this will undermine the authenticity of their experiences and affect the way in which examiners apply criterion E.

The research and writing process

Overview

- Initial guidance on research and writing
- Developing a research question
- Five steps to developing a research question
- Sample research questions
- Writing the extended essay
- Presentation
    - Word counts
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- Academic honesty
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    - Accessing sources: technology literacy—using electronic sources
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    - Use of computer programs
    - Reliance on external resources
- Proofreading

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Initial guidance on research and writing

Supervisors are recommended to advise their students on how to conduct research and write the extended essay, paying particular attention to the following key areas.

When researching the extended essay, students should follow the steps below.

1. Choose an available Diploma Programme subject for the extended essay for the session in question (subject to any restrictions imposed by the school).
2. Read the following materials: the assessment criteria, relevant subject-specific chapter of the *Extended essay guide*, the IB's ethical guidelines and other associated policies where relevant, such as those relating to animal experiments.
3. Set up the Researcher's reflection space (RRS) and use this as the key planning and reflection tool for the extended essay process.
4. Choose a topic and undertake some background reading on it.
5. Formulate a preliminary research question. Try to incorporate an IB command term in the research question if possible.
6. Draw up an outline plan for the research and writing process. This should include a timeline.
7. Begin to identify how and where they will gather source material for their research.
8. Identify which system of academic referencing they will use, ensuring that this meets the minimum requirements for the IB.
9. Set deadlines for themselves that are realistic and take into consideration the school's own internal deadlines.
10. Plan a structure for the essay. This may change as the research develops but it is useful to have a sense of direction from the start.
11. Undertake some preparatory reading in light of the proposed research question. *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.*
12. Carry out the research. *The material collected should be assembled in a logical order, linked to the structure of the essay and clearly focused on the research question posed. 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 research that undermines what they thought had been established earlier. If that happens, the research plan needs to be revised.*

Developing a research question

All students, regardless of the subject chosen, must frame their research question as a question. A hypothesis or statement of intent is not acceptable. The reason for this is that a question helps students to retain focus throughout the essay.

A research question is a **clear and focused** question centred on a research topic. Research questions usually emerge when questions are asked about a particular issue that a student is interested in or curious about.

A research question helps to focus the research, providing a path through which students will undertake the research and writing process. A clear and well-focused research question, which has a specific aim, will allow a student to work towards developing a reasoned argument within the scope of the task, rather than the kind of "all about" essay that an unfocused research question can lead to.

Sometimes students may need to revise their research question; therefore, a research question should always be considered provisional until they have enough research data to make a reasoned argument.

Supervisors should note that unfortunately the IB is unable to comment on the suitability of individual research questions. This is because the development of an appropriate research question forms part of the assessment. Should supervisors require support or advice with regard to possible research questions, the Online curriculum centre extended essay forum is a good starting point.

Five steps to developing a research question

Choose a subject and topic that is of interest.

Deciding on a subject and topic that is of interest and in which the student is personally invested is important if their motivation is to be sustained throughout the process. The student should be able to identify, in a broad sense, what it is that they are interested in and why.

Carry out preliminary reading.

After deciding on a topic of interest students should undertake some general reading around the issue. Questions they must consider at this stage are:

- What has already been written about this topic?
- Was it easy to find sources of information?
- Is there a range of different sources available?
- Is there a range of views or perspectives on the topic?
- What interesting questions have started to emerge from this reading?

Consider the emerging questions.

The student should now begin posing open-ended questions about their general topic. These questions will usually be framed using the terms “how”, “why” or “to what extent”.

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Evaluate the question.

Once possible research questions have been posed they should be evaluated. This evaluation should be based on whether the research question is clear, focused, and arguable.

Clear: Will the reader understand the nature of my research? Will it direct the research being undertaken?

Focused: Will the research question be specific enough to allow for exploration within the scope of the task (that is, the number of words and time available)?

Arguable: Does the research question allow for analysis, evaluation and the development of a reasoned argument?

Consider research outcomes.

Once a provisional research question has been decided upon students should start thinking about the direction their research might take. This could be in terms of:

- suggesting possible outcomes of the research
- outlining the kind of argument they might make and how the research might support this
- considering options if the research available is not sufficient to support a sustained argument.

Sample research questions

The following table gives guidance on the difference between unclear and unfocused research questions and those that are appropriately clear and focused, lending themselves to in-depth research.

Unclear, unfocused and unarguable research questions	Clear, focused, narrow research questions lending themselves to in-depth research
What was the impact of Ho Chi Minh's allegiance to Lenin?	To what extent was nationalism the guiding factor in Ho Chi Minh's adoption of Leninism in 1920?
What is the history of Chinese theatre?	How does the legacy of Mei Lan Fang contribute to modern Jingju?
How important is chlorophyll to plant life?	What is the effect of different concentrations of kinetin on leaves aging and the biosynthesis of chlorophyll?
How can the US government's spending policy be reformed?	To what extent did the rising COE prices affect the demand for new and used cars by the consumer population and hence affect the revenue generated by the Singaporean economy for the period 2012–16?

An important note:

A question that is unclear or too broad will result in a narrative overview of the issue or event being discussed and provide little scope for analysis and reasoned argument. The result of this is that examiners will not be able to apply the range of marks available in the assessment criteria, particularly in relation to criterion C (critical thinking).

Writing the extended essay

The structure of the essay is very important. It helps students to organize the argument, making the best use of the evidence collected.

There are six required elements of the final work to be submitted. More details about each element are given in the "Presentation" section. Please note that the order in which these elements are presented here is not necessarily the order in which they should be written.

Six required elements of the extended essay:

1. Title page
2. Contents page
3. Introduction
4. Body of the essay
5. Conclusion
6. References and bibliography

Title page

The title page should include **only** the following information:

- the title of the essay
- the research question
- the subject for which the essay is registered (if it is a language essay also state which category it falls into; if a world studies essay also state the theme and the two subjects utilized)
- word count.

An important note:

Please note that name of the student or the school should not appear on the title page or on any page headers. This is because the work is assessed anonymously.

The title

The title of your essay should be a clear, focused summative statement of your research, which gives the reader an indication of your research topic. It should **not** be phrased as a research question.

Title	Research question
Negative externalities of consumption: Australian policy on cigarette packaging	How effective has the Australian policy of plain cigarette packaging been in reducing the negative externalities associated with the consumption of cigarettes in X?
Commodification and the body—an ethnographic study of social representations about the human body with relation to organ donation	To what extent can we interpret the negative attitude from laymen towards organ donation as an act of resistance towards the demands of the hegemonic medical model? The case of organ donation in Argentina.

Title	Research question
An exploration of evil as a motivating force in drama	How effectively does Christopher Marlowe present his view of evil in *Dr Faustus*?
The feasibility of wireless networking in a city-wide context	To what extent is wireless networking a feasible alternative to cabled networking within a whole-city context?

Contents page

A contents page must be provided at the beginning of the extended essay and all pages should be numbered. Please note that an index page is not required and if included will be treated as if it is not present.

Introduction

The introduction should tell the reader what to expect in the essay. The introduction should make clear to the reader the focus of the essay, the scope of the research, in particular an indication of the sources to be used, and an insight into the line of argument to be taken.

While students should have a sense of the direction and key focus of their essay, it is sometimes advisable to finalize the introduction once the body of the essay is complete.

Body of the essay (research, analysis, discussion and evaluation)

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 some subjects, for example, the sciences, 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). In structuring their extended essay, students must take into consideration the expected conventions of the subject in which their extended essay is registered.

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 **must not** be included in appendices or footnotes/endnotes. The examiner **will not** read notes or appendices, so an essay that is not complete in itself will be compromised across the assessment criteria.

Conclusion

The conclusion says what has been achieved, including notes of any limitations and any questions that have not been resolved. While students might draw conclusions throughout the essay based on their findings, it is important that there is a final, summative conclusion at the end. This conclusion(s) must relate to the research question posed.

References and bibliography

Students should use their chosen style 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. For more information on this, refer to the guidelines in the IB document *Effective citing and referencing.*

Writing the essay takes time but if students have used their Researcher's reflection space and reflection sessions in a meaningful way they should be well prepared to develop their arguments.

Presentation

The extended essay should be written in a clear, correct and formal academic style, appropriate to the subject from which the topic is drawn. Given that the extended essay is a formally written research paper, it should strive to maintain a professional, academic look.

To help achieve this, the following formatting is **required:**

- the use of 12-point, readable font
- double spacing
- page numbering
- no candidate or school name on the title page or page headers.

Submitting the extended essay in the required format will help set the tone of the essay and will aid readability for on-screen assessment by examiners.

Word counts

The upper limit is 4,000 words for all extended essays.

Please note: Examiners are instructed not to read or assess any material in excess of the word limit. This means that essays containing more than 4,000 words will be compromised across all assessment criteria. Given the holistic nature of the assessment criteria, students who write in excess of the word limit will self-penalize across all criteria. For example, in criterion B, any knowledge and understanding demonstrated beyond the 4,000-word limit will be treated as if it were not present; in criterion C, analysis, discussion or evaluation made beyond the 4,000-word limit will be treated as if the point had not been made.

Supervisors and students should be aware that the e-upload of extended essays will facilitate the automatic recognition of a cut-off point for assessment. Students should ensure that they remain within the word limit and should edit accordingly.

Please refer to the following guidance on what content should be included in the word count.

Included in the word count	Not included in the word count
The introduction	The contents page
The main body	Maps, charts, diagrams, annotated illustrations
The conclusion	Tables
Quotations	Equations, formulas and calculations
Footnotes and/or endnotes that are not references	Citations/references (whether parenthetical, numbered, footnotes or endnotes)
	The bibliography
	The *Reflections on planning and progress form*

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Please refer to the document entitled *Diploma Programme assessment: Principles and practice* for further clarification of word count requirements.

A note for students writing in Chinese and Japanese:

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

- Japanese: 1 word = approximately 2 Japanese characters (upper limit 8,000 characters)
- Chinese: 1 word = approximately 1.2 Chinese characters (upper limit 4,800 characters)

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.

Any labelling should contain the minimum information to ensure the examiner understands the significance of the map, chart, diagram or illustration. It must not include commentary, as this will be considered as part of the essay discussion and thus included in the word count.

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. Students should be advised to use illustrations with caution as excessive use may detract from the discussion in the essay. They should only be used if they are relevant and appropriate to a point being made as part of the argument of the essay.

Tables

The use of tables should be considered carefully and are only really appropriate in certain subjects. Tables must not be used in an attempt to circumvent the word limit.

Footnotes and endnotes

Footnotes and endnotes may be used for referencing purposes and if this is the case will not be included in the word count of the essay. If information is contained in a footnote or endnote and is not a reference, this **must** be included in the word count. In order to avoid confusion and unwittingly exceed the word limit, students are advised to avoid using footnotes or endnotes other than for referencing purposes unless it is appropriate.

As footnotes and endnotes are not an essential part of the extended essay students must take care to ensure that all information with direct relevance to the analysis, discussion and evaluation of their essay is contained in the main body of it.

An essay that attempts to evade the word limit by including important material in footnotes or endnotes will be compromised across the assessment criteria. Please note that footnotes and endnotes are added to the word count as they are encountered.

Appendices

Appendices are not an essential part of the extended essay and examiners will not read them, or use any information contained within them, in the assessment of the essay. Students must take care to ensure that all information with direct relevance to the analysis, discussion and evaluation of their essay is contained in the main body of it. Appendices should therefore be avoided except in the following instances:

- an exemplar of a questionnaire or interview questions
- an exemplar of permission letters
- group 1, category 1 essays: copies of poems or short stories (of less than three pages)
- group 1, category 3 essays: excerpts from newspapers, advertisements and transcripts of speeches
- language acquisition, category 1 and 2: excerpts from newspapers, advertisements, transcripts of speeches, etc
- language acquisition, category 3: excerpts or copies of poems or short stories (less than 3 pages)
- an external mentor letter, where one has been used
- raw data or statistical tables for experimental sciences (this should not include any analysis or conclusions).

Students should not continually refer to material presented in an appendix as this may disrupt the continuity of the essay and examiners are not required to refer to 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.

Academic honesty

Research practices when working on an extended essay must reflect the principles of academic honesty. The essay must provide the reader with the **precise** sources of quotations, ideas and points of view through accurate citations, which may be in-text or footnotes, and full references listed in the bibliography, which, regardless of the system used, must ensure the minimum requirements.

Producing accurate references and a bibliography is a skill that students should be seeking to refine as part of the extended essay writing process. 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 academic misconduct and will, therefore, be treated as a potential breach of IB regulations.

For further information, see *Academic honesty in the IB educational context* and *Effective citing and referencing*.

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 **must** list only those sources cited.

Citations

A citation is a shorthand method of making a reference in the body of an essay, either as an in-text citation or footnote/endnote. This must then be linked to the full reference at the end of the essay in the bibliography. 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 referencing style that has been chosen. Page numbers should normally be given when referencing printed material and this is especially so in the case of direct quotations. For some styles this will also 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.

Referencing

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.

There are a number of different styles available for use when writing research papers; most are appropriate in some academic disciplines but not others. The supervisor or school librarian 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 and in line with the IB's minimum requirements. When choosing the style, the student needs to have a clear understanding of how it is to be used before embarking on the research task. The 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.

The IB's minimum requirements include:

- name of author
- date of publication
- title of source
- page numbers (print sources only)
- date of access (electronic sources only).

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

For more detailed information on styles for citations and referencing please refer to the IB document *Effective citing and referencing.*

Referencing online materials

References to online materials should include the title of the extract used as well as the website address, the date it was accessed and, if possible, the author. With regard to electronic sources, the requirement of the IB for date stamping supersedes the requirements of the chosen referencing system. In other words, all electronic sources must be date stamped by including the date the student accessed the resource (for example, accessed 12 March 2016). Caution should be exercised with information found 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.

Accessing sources: technology literacy—using electronic sources

Using the internet as a resource for finding information is more and more commonplace, and it is a tremendous resource. However, it must be used critically and with care. One important thing to be aware of is that unlike resources found in a library in printed form, those found on the internet may not have been through a review or editing process.

Students should:

- know appropriate search engines to use
- not rely exclusively on sources found on the internet

- have a clear and focused research question to help them search more directly on the internet (given the amount of information available it is easy to be overwhelmed)
- critically evaluate the reliability and validity of the information presented on the internet
- keep a detailed record of all references, in accordance with the IB's minimum requirements, ensuring that the URL of where the source was located is written down correctly. This includes recording the date that the site was accessed. The Researcher's reflection space (RRS) is a good tool for supporting this practice.

The following table contains a series of questions students can apply to determine the reliability and validity of information presented on the internet. It could equally apply to print resources.

Desirable source attribute	Questions to consider in order to determine this
Authority	• Is the author of the information identified? • If the author has chosen to remain anonymous, why might this be? Is this significant in terms of your evaluation of the information presented? • Is there enough information available to establish the author's credibility? • Is the author affiliated to an academic institution or credible organization? • Is the author qualified to write about the subject?
Audience appropriate	• Who is the intended audience? • Does the information presented appropriately address the target audience? • Is the information relevant to your area of research?
Reliability and credibility	• Does the information appear to be valid and well researched? • Can it be supported by evidence? • Can the information be verified through other sources? • Is there a non-web equivalent of this material that could be used to verify the information? • Does the URL (web address) give you any indication of the source of the information?
Accuracy	• Is there an indication as to who has responsibility for the accuracy of the information provided? • Do you know if the information has been reviewed? • Are there grammatical, spelling or typographical errors? If there are, what does this suggest about the source? • Is there a bibliography?
Objectivity	• Is the information fact or opinion? • Is the language used free of bias?

Desirable source attribute	Questions to consider in order to determine this
	• Is the author's point of view objective or do they make it clear when they are expressing a personal opinion? • Is it a personal website? • Is the author affiliated with any institution or organization which might create a bias in the information?
Currency	• Is the information kept up-to-date? • Is there any indication of when the information was last updated? • Are any links up to date and working?

Using online encyclopedias and other similar information websites

As a tool for research, free online encyclopedias can be valuable resources, but there are several reasons why students should be cautious in using them:

- they tend to be general encyclopedias
- very often the author is unknown
- there is no guarantee that the content meets standards of academic rigour—it may not, for example, have been through a process of peer review
- the content can be unstable, in that it can change at any time.

Teachers, supervisors and coordinators may choose to caution against the use of free online encyclopedias and other similar information websites. Certainly a bibliography that only cites these for reference or an argument that is overly reliant on them will not demonstrate the necessary "range of sources" required by the assessment criteria for the extended essay. They may also not be relevant or appropriate for the research question being explored.

Many online encyclopedias are not scholarly sources; however, if used appropriately and critically they can offer a useful starting point for many students undertaking research. Rather than absolutely discouraging the use of these sites, it may be more supportive to explore their potential as a platform for training students in research and thinking skills, especially in terms of assessing and evaluating the information they provide.

The internet is part of the education information ecosystem and a "real-world" source that many students engage with. The rise in popularity of free online encyclopedias has led to a shift in how knowledge and expertise is viewed, with new definitions of notions such as authority and expertise. For this reason, ensuring that students use it in an informed way is essential if they are to develop the necessary research, critical thinking and reflection skills in which the extended essay places value.

If using free online encyclopedias, students should do the following.

- Follow the references provided by the encyclopedia; this will help to verify the information given.
- Consider whether the article is part of a larger project, where a number of people are contributing to the discussion. If it is, then it implies that the writers have more than a casual interest in the topic being written about.
- Look to see if there is a rating for the information provided. If there is then this means that the information has undergone some sort of peer review and been given a rating. While not the same as an academic peer review, it can aid the judgment of the "quality" of the information.

The key point to remember, if students do use information that is found on the internet, is that they are responsible for ensuring that it is both reliable and accurate. One way a supervisor could facilitate this as a learning opportunity is in terms of a discussion with students about the quality of their sources. This could take the form of asking students to produce an annotated bibliography as part of their Researcher's reflection space. An annotated bibliography provides a concise summary of each source and some assessment of its value and relevance. A good annotated bibliography will:

- encourage students to think critically about the sources they are using and how these relate to their chosen research area in terms of their relevance for example
- provide a way to help students determine whether a source is of use to them in their research
- allow students to keep track of their reading and enable them to make informed decisions about which sources to use in writing their essay.

Use of computer programs

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.)

Reliance on external resources

Irrespective of the subject, the extended essay should be a complete piece of independent research, modelled on an academic journal/research paper, which can exist and be understood on its own, without the need to access external links, such as hyperlinks, or accompanying material such as DVDs.

Examiners will not access any material contained in an external source when assessing an essay. Material that is pertinent to the argument being made must be contained in the essay itself to be considered by examiners in their assessment of it.

As with appendices, if information central to the argument is included in the external link, it is treated as though the point has not been made and as such could affect different criteria, for example, criterion C (critical thinking), depending on the quality of the other analyses.

Proofreading

The whole essay needs to be proofread carefully by the student (computer spelling and grammar checkers are useful but will not do everything). They must not ask someone else to proofread their work as this is an important part of the learning experience.

Assessment

Overview

- Assessment in the Diploma Programme
- Methods of assessment
- Assessment of the extended essay
    - Inclusive assessment arrangements
    - Responsibilities of the school
- Overview of the assessment criteria for the extended essay
- Best-fit approach and markbands
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    - Criterion C: critical thinking
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- Assessment grade descriptors for the extended essay
- Unpacking the criteria

Assessment in the Diploma Programme

General

Assessment is an integral part of teaching and learning. The most important aims of assessment in the Diploma Programme are that it should support curricular goals and encourage appropriate student learning. Both external and internal assessments are used in the Diploma Programme. IB examiners mark work produced for external assessment, while work produced for internal assessment is marked by teachers and externally moderated by the IB.

There are two types of assessment identified by the IB.

- Formative assessment informs both teaching and learning. It is concerned with providing accurate and helpful feedback to students and teachers on the kind of learning taking place and the nature of students' strengths and weaknesses in order to help develop students' understanding and capabilities. Formative assessment can also help to improve teaching quality, as it can provide information to monitor progress towards meeting the course aims and objectives.
- Summative assessment gives an overview of previous learning and is concerned with measuring student achievement.

The Diploma Programme primarily focuses on summative assessment designed to record student achievement at, or towards the end of, the course of study. However, many of the assessment instruments can also be used formatively during the course of teaching and learning, and teachers are encouraged to do this. A comprehensive assessment plan is viewed as being integral with teaching, learning and course organization. For further information, see the IB *Programme standards and practices* document.

The approach to assessment used by the IB is criterion-related, not norm-referenced. This approach to assessment judges students' work by their performance in relation to identified levels of attainment, and not in relation to the work of other students. For further information on assessment within the Diploma Programme please refer to the publication *Diploma Programme assessment: Principles and practice*.

To support teachers in the planning, delivery and assessment of the Diploma Programme courses, a variety of resources can be found on the OCC or purchased from the IB store (http://store.ibo.org). Additional publications such as specimen papers and markschemes, teacher support materials, subject reports and grade descriptors can also be found on the online curriculum centre (OCC). Past examination papers as well as markschemes can be purchased from the IB store.

Methods of assessment

The IB uses several methods to assess work produced by students.

Assessment criteria

Assessment criteria are used when the assessment task is open-ended. Each criterion concentrates on a particular skill that students are expected to demonstrate. An assessment objective describes what students should be able to do, and assessment criteria describe how well they should be able to do it. Using assessment criteria allows discrimination between different answers and encourages a variety of responses. Each criterion comprises a set of hierarchically ordered level descriptors. Each level descriptor is worth one or more marks. Each criterion is applied independently using a best-fit model. The maximum marks for each criterion may differ according to the criterion's importance. The marks awarded for each criterion are added together to give the total mark for the piece of work.

Markbands

Markbands are a comprehensive statement of expected performance against which responses are judged. They represent a single holistic criterion divided into level descriptors. Each level descriptor corresponds to a range of marks to differentiate student performance. A best-fit approach is used to ascertain which particular mark to use from the possible range for each level descriptor.

Analytic markschemes

Analytic markschemes are prepared for those examination questions that expect a particular kind of response and/or a given final answer from students. They give detailed instructions to examiners on how to break down the total mark for each question for different parts of the response.

Marking notes

For some assessment components marked using assessment criteria, marking notes are provided. Marking notes give guidance on how to apply assessment criteria to the particular requirements of a question.

Assessment of the extended essay

Assessment of the extended essay is a combination of formative assessment (the *Reflections on planning and progress form*) and summative assessment (the extended essay itself).

Generic assessment criteria are used with subject-specific interpretations.

Inclusive assessment arrangements

Inclusive assessment arrangements are available for students with assessment access requirements. These arrangements enable students with diverse needs to access the examinations and demonstrate their knowledge and understanding of the constructs being assessed.

The IB document *Candidates with assessment access requirements* provides details on all the inclusive assessment arrangements available to students with learning support requirements. The IB document *Learning diversity within the International Baccalaureate programmes: Special educational needs within the International Baccalaureate programmes* outlines the position of the IB with regard to students with diverse learning needs in the IB programmes.

For students affected by adverse circumstances, the IB documents *General regulations: Diploma Programme* and the *Handbook of procedures for the Diploma Programme* provide details on access consideration.

Responsibilities of the school

The school is required to ensure that equal access arrangements and reasonable adjustments are provided to students with learning support requirements that are in line with the IB documents *Candidates with assessment access requirements* and *Learning diversity within the International Baccalaureate programmes: Special educational needs within the International Baccalaureate programmes* .

Overview of the assessment criteria for the extended essay

Overview

Criterion A: focus and method	Criterion B: knowledge and understanding	Criterion C: critical thinking	Criterion D: presentation	Criterion E: engagement
• Topic • Research question • Methodology	• Context • Subject-specific terminology and concepts	• Research • Analysis • Discussion and evaluation	• Structure • Layout	• Process • Research focus
Marks	Marks	Marks	Marks	Marks
6	6	12	4	6

Total marks available: 34

Best-fit approach and markbands

Assessment criteria must be used in conjunction with the relevant specific-subject interpretations as these interpretations articulate how the generic assessment criteria are understood and applied to each subject.

Levels of performance are described using multiple indicators per level. In many cases the indicators occur together throughout the essay, but not always. Also, not all indicators are always present. This means that a student can demonstrate performances that fit into different levels. To accommodate this, the IB assessment models use markbands and advise examiners and teachers to use a **best-fit approach** in deciding the appropriate mark for a particular criterion. From various assessment trials we know that introducing markbands and using the best-fit model is not always self-evident, and guidance is needed to help with their application. While the extended essay is an externally assessed component of the DP, supervisors are required to submit a predicated grade and understanding the way in which the criteria are applied by examiners will assist with the guidance given to students. The following explains how markbands are used by examiners. The aim is to find the descriptor that conveys most accurately the level attained by the student's work, using the best-fit approach. A best-fit approach means that compensation will be made when a piece of work matches different aspects of a markband at different levels. The mark awarded will be one that most fairly reflects the balance of achievement against the markband. It is not necessary for every indicator of a level descriptor to be met for that mark to be rewarded. (For example, if student work matches two of the three requirements within a markband but one is seriously lacking, the student should be awarded for the strands that have been met well, but the mark awarded should be at the lower end of the markband to compensate for what is lacking in one strand. If the level of student work spans multiple markbands, compensation depends on the performance in the higher order skills of evaluation (AO3), discussion (AO3) and analysis (AO2) (see the example below).

Criterion C: Critical thinking

Research	Excellent (10–12)	Research	Good (7–9)
Analysis	Good (7–9)	Analysis	Good (7–9)
Discussion/evaluation	Adequate (4–6)	Discussion/evaluation	Adequate (4–6)
Mark awarded	8/9 (The 7–9 markband is appropriate because communication of research is a lower order skill compared to analysis and evaluation.)	Mark awarded	7 (The bottom end of the 7–9 markband is appropriate since the achievement level is lower for the higher order skill of discussion/ evaluation.)

- When assessing a student's work, examiners will read the level descriptors from the bottom up until they reach a descriptor that most appropriately describes the level of the work being assessed.
- If a piece of work seems to fall between two descriptors, both descriptors will be read again and the one that more appropriately describes the student's work will be chosen. In relation to criterion C, examiners will bear in mind the higher order skills being assessed.

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- There are a number of marks available within a level; examiners will award the upper marks if the student's work demonstrates the qualities described to a greater extent. Examiners will award the lower marks if the student's work demonstrates the qualities described to a lesser extent.
- The highest level descriptors do not imply faultless performance and should be achievable by a student. Examiners will not hesitate to use the extremes if they are appropriate descriptions of the work being assessed.

The assessment criteria

Criterion A: Focus and method

This criterion focuses on the topic, the research question and the methodology. It assesses the explanation of the focus of the research (this includes the topic and the research question), how the research will be undertaken, and how the focus is maintained throughout the essay.

Level	Descriptor
0	The work does not reach a standard outlined by the descriptors below.
1–2	The topic is communicated unclearly and incompletely. • Identification and explanation of the topic is limited; the purpose and focus of the research is unclear, or does not lend itself to a systematic investigation in the subject for which it is registered. The research question is stated but not clearly expressed or too broad. • The research question is too broad in scope to be treated effectively within the word limit and requirements of the task, or does not lend itself to a systematic investigation in the subject for which it is registered. • The intent of the research question is understood but has not been clearly expressed and/or the discussion of the essay is not focused on the research question. Methodology of the research is limited. • The source(s) and/or method(s) to be used are limited in range given the topic and research question. • There is limited evidence that their selection was informed.
3–4	The topic is communicated. • Identification and explanation of the research topic is communicated; the purpose and focus of the research is adequately clear, but only partially appropriate. The research question is clearly stated but only partially focused. • The research question is clear but the discussion in the essay is only partially focused and connected to the research question. Methodology of the research is mostly complete. • Source(s) and/or method(s) to be used are generally relevant and appropriate given the topic and research question. • There is some evidence that their selection(s) was informed. If the topic or research question is deemed inappropriate for the subject in which the essay is registered no more than four marks can be awarded for this criterion.
5–6	The topic is communicated accurately and effectively.

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Level	Descriptor
	• Identification and explanation of the research topic is effectively communicated; the purpose and focus of the research is clear and appropriate. The research question is clearly stated and focused. • The research question is clear and addresses an issue of research that is appropriately connected to the discussion in the essay. Methodology of the research is complete. • An appropriate range of relevant source(s) and/or method(s) have been applied in relation to the topic and research question. • There is evidence of effective and informed selection of sources and/or methods.

Criterion B: Knowledge and understanding

This criterion assesses the extent to which the research relates to the subject area/discipline used to explore the research question, or in the case of the world studies extended essay, the issue addressed and the two disciplinary perspectives applied, and additionally the way in which this knowledge and understanding is demonstrated through the use of appropriate terminology and concepts.

Level	Descriptor
0	The work does not reach a standard outlined by the descriptors below.
1–2	Knowledge and understanding is limited. • The selection of source material has limited relevance and is only partially appropriate to the research question. • Knowledge of the topic/discipline(s)/issue is anecdotal, unstructured and mostly descriptive with sources not effectively being used. Use of terminology and concepts is unclear and limited. • Subject-specific terminology and/or concepts are either missing or inaccurate, demonstrating limited knowledge and understanding.
3–4	Knowledge and understanding is good. • The selection of source material is mostly relevant and appropriate to the research question. • Knowledge of the topic/discipline(s)/issue is clear; there is an understanding of the sources used but their application is only partially effective. Use of terminology and concepts is adequate. • The use of subject-specific terminology and concepts is mostly accurate, demonstrating an appropriate level of knowledge and understanding. If the topic or research question is deemed inappropriate for the subject in which the essay is registered no more than four marks can be awarded for this criterion.

Level	Descriptor
5–6	Knowledge and understanding is excellent. • The selection of source materials is clearly relevant and appropriate to the research question. • Knowledge of the topic/discipline(s)/issue is clear and coherent and sources are used effectively and with understanding. Use of terminology and concepts is good. • The use of subject-specific terminology and concepts is accurate and consistent, demonstrating effective knowledge and understanding.

Criterion C: Critical thinking

This criterion assesses the extent to which critical-thinking skills have been used to analyse and evaluate the research undertaken.

Level	Descriptor
0	The work does not reach a standard outlined by the descriptors below.
1–3	The research is limited. • The research presented is limited and its application is not clearly relevant to the RQ. Analysis is limited. • There is limited analysis. • Where there are conclusions to individual points of analysis these are limited and not consistent with the evidence. Discussion/evaluation is limited. • An argument is outlined **but** this is limited, incomplete, descriptive or narrative in nature. • The construction of an argument is unclear and/or incoherent in structure hindering understanding. • Where there is a final conclusion, it is limited and not consistent with the arguments/evidence presented. • There is an attempt to evaluate the research, but this is superficial. If the topic or research question is deemed inappropriate for the subject in which the essay is registered no more than three marks can be awarded for this criterion.
4–6	The research is adequate. • Some research presented is appropriate and its application is partially relevant to the Research question. Analysis is adequate. • There is analysis **but** this is only partially relevant to the research question; the inclusion of irrelevant research detracts from the quality of the argument.

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Level	Descriptor
	• Any conclusions to individual points of analysis are only partially supported by the evidence. Discussion/evaluation is adequate. • An argument explains the research **but** the reasoning contains inconsistencies. • The argument may lack clarity and coherence but this does not significantly hinder understanding. • Where there is a final or summative conclusion, this is only partially consistent with the arguments/evidence presented. • The research has been evaluated but not critically.
7–9	The research is good. • The majority of the research is appropriate and its application is clearly relevant to the research question. Analysis is good. • The research is analysed in a way that is clearly relevant to the research question; the inclusion of less relevant research rarely detracts from the quality of the overall analysis . • Conclusions to individual points of analysis are supported by the evidence but there are some minor inconsistencies. Discussion/evaluation is good. • An effective reasoned argument is developed from the research, with a conclusion supported by the evidence presented. • This reasoned argument is clearly structured and coherent and supported by a final or summative conclusion; minor inconsistencies may hinder the strength of the overall argument. • The research has been evaluated, and this is partially critical.
10–12	The research is excellent. • The research is appropriate to the research question and its application is consistently relevant. Analysis is excellent. • The research is analysed effectively and clearly focused on the research question; the inclusion of less relevant research does not significantly detract from the quality of the overall analysis. • Conclusions to individual points of analysis are effectively supported by the evidence. Discussion/evaluation is excellent. • An effective and focused reasoned argument is developed from the research with a conclusion reflective of the evidence presented.

Level	Descriptor
	• This reasoned argument is well structured and coherent; any minor inconsistencies do not hinder the strength of the overall argument or the final or summative conclusion. • The research has been critically evaluated.

Criterion D: Presentation

This criterion assesses the extent to which the presentation follows the standard format expected for academic writing and the extent to which this aids effective communication.

Level	Descriptor
0	The work does not reach a standard outlined by the descriptors below.
1–2	Presentation is acceptable. • The structure of the essay is generally appropriate in terms of the expected conventions for the topic, argument and subject in which the essay is registered. • Some layout considerations may be missing or applied incorrectly. • Weaknesses in the structure and/or layout do not significantly impact the reading, understanding or evaluation of the extended essay.
3–4	Presentation is good. • The structure of the essay clearly is appropriate in terms of the expected conventions for the topic, the argument and subject in which the essay is registered. • Layout considerations are present and applied correctly. • The structure and layout support the reading, understanding and evaluation of the extended essay.

Criterion E: Engagement

This criterion assesses the student's engagement with their research focus and the research process. It will be applied by the examiner at the end of the assessment of the essay, after considering the student's *Reflections on planning and progress form*.

Level	Descriptor
0	The work does not reach a standard outlined by the descriptors below.
1–2	Engagement is limited. • Reflections on decision-making and planning are mostly descriptive. • These reflections communicate a limited degree of personal engagement with the research focus and/or research process.
3–4	Engagement is good.

Level	Descriptor
	• Reflections on decision-making and planning are analytical and include reference to conceptual understanding and skill development. • These reflections communicate a moderate degree of personal engagement with the research focus and process of research, demonstrating some intellectual initiative.
5–6	Engagement is excellent. • Reflections on decision-making and planning are evaluative and include reference to the student's capacity to consider actions and ideas in response to setbacks experienced in the research process. • These reflections communicate a high degree of intellectual and personal engagement with the research focus and process of research, demonstrating authenticity, intellectual initiative and/or creative approach in the student voice.

Assessment grade descriptors for the extended essay

Effective May 2018

Grade descriptors

Grade A
Demonstrates effective research skills resulting in a well-focused and appropriate research question that can be explored within the scope of the chosen topic; effective engagement with relevant research areas, methods and sources; excellent knowledge and understanding of the topic in the wider context of the relevant discipline; the effective application of source material and correct use of subject-specific terminology and/or concepts further supporting this; consistent and relevant conclusions that are proficiently analysed; sustained reasoned argumentation supported effectively by evidence; critically evaluated research; excellent presentation of the essay, whereby coherence and consistency further supports the reading of the essay; and present and correctly applied structural and layout elements. **Engagement with the process is conceptual and personal, key decision-making during the research process is documented, and personal reflections are evidenced, including those that are forward-thinking.**
Grade B
Demonstrates appropriate research skills resulting in a research question that can be explored within the scope of the chosen topic; reasonably effective engagement with relevant research areas, methods and sources; good knowledge and understanding of the topic in the wider context of the relevant discipline; a reasonably effective application of source material and use of subject-specific terminology and/or concepts; consistent conclusions that are accurately analysed; reasoned argumentation often supported by evidence; research that at times evidences critical evaluation; and a clear presentation of all structural and layout elements, which further supports the reading of the essay. **Engagement with the process is generally evidenced by the reflections and key decision-making during the research process is documented.**
Grade C
Demonstrates evidence of research undertaken, which has led to a research question that is not necessarily expressed in a way that can be explored within the scope of the chosen topic; partially effective engagement with mostly appropriate research areas, methods and sources—however, there are some discrepancies in those processes, although these do not interfere with the planning and approach; some knowledge and understanding of the topic in the wider context of the discipline, which is mostly relevant; the attempted application of source material and appropriate terminology and/or concepts; an attempted synthesis of research results with partially relevant analysis; conclusions partly supported by the evidence; discussion that is descriptive rather than analytical; attempted evaluation; satisfactory presentation of the essay, with weaknesses that do not hinder the reading of the essay; and some structural and layout elements that are missing or are incorrectly applied. **Engagement with the process is evidenced but shows mostly factual information, with personal reflection mostly limited to procedural issues.**
Grade D
Demonstrates a lack of research, resulting in unsatisfactory focus and a research question that is not answerable within the scope of the chosen topic; at times engagement with appropriate research, methods and sources, but discrepancies in those processes that occasionally interfere with the planning and approach; some relevant knowledge and understanding of the topic in the wider context of the discipline, which are at times irrelevant; the attempted application of source material, but with inaccuracies in the use of, or underuse of, terminology and/or concepts; irrelevant analysis and inconsistent conclusions as a result of a descriptive discussion; a lack of evaluation; presentation of the essay that at times is illogical and hinders the reading; and structural and layout elements that are missing. **Engagement with the process is evidenced but is superficial, with personal reflections that are solely narrative and concerned with procedural elements.**
Grade E (failing condition)

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Demonstrates an unclear nature of the essay; a generally unsystematic approach and resulting unfocused research question; limited engagement with limited research and sources; generally limited and only partially accurate knowledge and understanding of the topic in the wider context of the relevant discipline; ineffective connections in the application of source material and inaccuracies in the terminology and/or concepts used; a summarizing of results of research with inconsistent analysis; an attempted outline of an argument, but one that is generally descriptive in nature; and a layout that generally lacks or incorrectly applies several layout and structural elements.
Engagement with the process is limited, with limited factual or decision-making information and no personal reflection on the process.

Unpacking the criteria

The following is intended to help you understand each criterion in terms of what should be included in the extended essay to achieve the highest level.

Each criterion is organized at three levels of information. Firstly, the **markband**, which relates to the mark range available; secondly, **the strand**, which relates to what is being assessed; and, thirdly, **the indicators**, which are the demonstration of the strands within a markband. For example:

Markband 1–2	**(Strand)** The topic is communicated unclearly and incompletely. (Indicators of the strand) • Identification and explanation of the topic is limited; the purpose and focus of the research is unclear, or does not lend itself to a systematic investigation in the subject for which it is registered. **(Strand)** The research question is stated but not clearly expressed or too broad. (Indicators of the strand) • The research question is too broad in scope to be treated effectively within the word limit and requirements of the task, or does not lend itself to a systematic investigation in the subject for which it is registered. • The intent of the research question is understood but has not been clearly expressed and/or the discussion of the essay is not focused on the research question. **(Strand)** Methodology of the research is limited. (Indicators of the strand) • The source(s) and/or method(s) to be used are limited in range given the topic and research question. • There is limited evidence that their selection was informed.
Criterion	Unpacking the criterion
A: Focus and method	This criterion focuses on the topic, the research question and the methodology. It assesses the explanation of the focus of the research (this includes the topic and the research question), how the research will be undertaken, and how the focus is maintained throughout the essay. 1. The topic chosen is identified and explained to readers in terms of contextualizing and justifying its worthiness. • How well does the research paper identify and communicate the chosen topic? 2. The purpose and focus of the research to be addressed is within the scope of a 4,000-word extended essay, is outlined in the introduction and specified as a research question. • Is the research question appropriate given the scope of the task? For example, is the topic sufficiently focused to be adequately addressed within the requirements of the task?

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	• Is the research question clearly stated, focused and based on/situated against background knowledge and understanding of the chosen subject/topic area? • Is the focus of the research question maintained throughout the essay? 3. The research is planned and appropriate methods of data collection (methodology) are chosen and identified in order to address the research question. • Is there evidence of effective and informed source/method selection with regard to the choice of appropriate sources and/or method(s) used to gather information, including narrowing of scope the range of sources/methods, in order to address the research question within the constraints of the word limit? 4. Sources/methods are considered relevant/appropriate or sufficient in so far as the academic standards for the discipline are concerned. For example, for an economics essay, it would not be sufficient to only use textbooks but rather include reports and data. There is no consideration of the research question as such.
B: Knowledge and understanding	This criterion assesses the extent to which the research relates to the subject area/discipline used to explore the research question, or in the case of the world studies extended essay, the issue addressed and the two disciplinary perspectives applied, and additionally the way in which this knowledge and understanding is demonstrated through the use of appropriate terminology and concepts. 1. The research question being investigated is put into the context of the subject/discipline/issue. • Demonstration of the appropriate and relevant selection and application of the sources is identified. 2. Knowledge and understanding of the topic chosen and the research question posed is demonstrated with appropriate subject-specific terminology. • The use of subject-specific terminology and/or concepts is an indicator of knowledge and understanding of the discipline(s)/issue discussed. 3. Sources/methods are assessed here in terms of their appropriateness to the research question.
C: Critical thinking	This criterion assesses the extent to which critical thinking skills have been used to analyse and evaluate the research undertaken. 1. The selection and application of the research presented is relevant and appropriate to the research question. 2. The appropriateness of sources/methods in terms of how they have been used in the development of the argument presented. 3. The analysis of the research is effective and focused on the research question. 4. The discussion of the research develops a clear and coherent reasoned argument in relation to the research question.

	5. There is a critical evaluation of the arguments presented in the essay. 6. Unlikely or unexpected outcomes can also demonstrate critical thinking.
D: Presentation	This criterion assesses the extent to which the presentation follows the standard format expected for academic writing and the extent to which this aids effective communication. 1. **Structure:** the structure of the essay is compatible with the expected conventions of a research paper in the subject for which the essay has been submitted. (Examiners, supervisors and students are advised to check the guidance given in the *Extended essay guide* for the relevant subject.) 2. **Layout:** title page, table of contents, page numbers, section headings (where appropriate), effective inclusion of illustrative materials (tables, graphs, illustrations, appropriately labelled) and quotations, bibliography and referencing. • The referencing system should be correctly and consistently applied and should contain the minimum information as detailed in the Extended essay guide.* • The extended essay has not exceeded the maximum word limit.** * If referencing does not meet this minimum standard work should be considered as a case of possible academic misconduct. ** If the essay exceeds 4,000 words, examiners should not read or assess beyond the maximum 4,000-word limit. Students who exceed the word limit will compromise the assessment of their extended essay across all criteria. For example, in criterion B, any knowledge and understanding demonstrated beyond the 4,000-word limit will be treated as if it were not present; in criterion C, any analysis, discussion or evaluation made beyond the 4,000-word limit will be treated as if the point had not been made. Given the holistic nature of the assessment criteria, students who write in excess of the word limit will self-penalize across all criteria.
E: Engagement	This criterion assesses the student's engagement with their research focus and the research process. It will be applied by the examiner at the end of the assessment of the essay, after considering the student's *Reflections on planning and progress form*. 1. **Engagement with the process:** the student has engaged in discussions with their supervisor in the planning and progress of their research; the student is able to reflect on and refine the research process, and react to insights gained through the exploration of their research question; the student is able to evaluate decisions made throughout the research process and suggest improvements for their own working practices. 2. **Engagement with their research focus:** an insight into the student's thinking, intellectual initiative and creative approach through reflections on the thought and research process; the extent to which the student voice is present rather than that of the supervisor and academics; is the student's engagement reflected?

Subject-specific guidance

Overview

This section covers individual subjects' requirements for the extended essay (EE) in terms of:

- Choice of topic
- Treatment of topic
- Assessment:
    - Criterion A: focus and method
    - Criterion B: knowledge and understanding
    - Criterion C: critical thinking
    - Criterion D: presentation
    - Criterion E: engagement.

It assumes that teachers are already familiar with the *Extended essay guide* and the *Extended essay teacher support material*, in particular the process whereby students choose a subject area and topic, write their research question and select the research method(s) they will use to explore and answer it.

For a full summary, see the process diagram and the generic assessment criteria.

Or for a quick refresher, read the general requirements.

General requirements

The EE is an in-depth study of a focused topic. It gives students the opportunity to:

- engage in independent research with intellectual initiative, creativity and rigour
- develop research, thinking, self-management and communication skills
- reflect on what they have learned throughout the research and writing process.

All students must:

- provide a logical and coherent rationale for their choice of topic
- review what has already been written about the topic
- formulate a clear research question
- offer a concrete description of the methods they use to investigate the question
- generate reasoned interpretations and conclusions based on their reading and independent research in order to answer the question.

Choice of topic

See also "Initial guidance on research and writing"

Students first need to identify the broad area of inquiry they are interested in.

Sources of ideas may include:

- work already undertaken as part of the course
- preliminary reading of academic journals and reputable scholarly e-resources, for example conference papers, essays, book chapters or journal articles (a school librarian can advise on this)
- conversations with teachers, fellow students and librarians.

Literature review

Students should try to read as much as they can of what has already been written about their topic. Time spent on a literature review early on in the research process will guide and improve their work. It will help them to:

- contextualize their research question and subsequent findings
- meet Criterion B: Demonstrating knowledge and understanding.

While conducting their literature review, students may find it useful to compile an annotated bibliography and to record their responses to what they read in their researcher's reflection space (RRS).

If using the internet, students are encouraged to use specialized academic search engines that will find resources appropriate for citation in the EE.

Students must be aware of their responsibilities to cite properly the resources they use and to check their work for plagiarism. Their citations should adhere to the requirements of the IB and be consistently applied.

Research question

Students should identify a **working** research question early on but be prepared to change, for example if too little information is available to permit the intended investigation.

Students should be guided by the idea that what they are writing is important because:

- it seeks to fill a gap in understanding their chosen topic, or
- it offers a resolution to some controversial argument.

The research question should therefore be non-trivial and follow from the existing body of literature on the topic. It must be:

- specific, sharply focused and capable of being answered within a 4,000-word essay
- stated clearly in the introduction of the essay and on the title page
- related to the chosen topic.

Students need to avoid researching questions that are too narrow or too obvious as this will limit their ability to formulate reasoned arguments.

Their answer to the question must be analytical rather than descriptive.

In most subjects the research question must be written **as a question**. In some, students can express it as a statement or proposition.

Treatment of the topic

Once students have identified their topic and written their research question, they can decide how to research their answer. They may find it helpful to write a statement outlining their broad approach.

The definition of "research" and terms such as "primary data" and "secondary data" varies from subject to subject.

In some subjects, students must use both primary and secondary data. In others, students may, or even must, rely exclusively on secondary data.

However, all students must carry out secondary research in terms of a literature review for their topic.

Two important reminders

1. Undertaking an extended essay is a challenge. Planning is crucial. Students need to start writing their papers early and discuss any emerging difficulties with their supervisor. As well as their supervisors, librarians are a great source of information, advice and support for students.
2. Students risk their diploma if found guilty of academic misconduct:
   - **Academic honesty:** students' work will be checked in terms of the IB's academic honesty policy and so all students must ensure that they are familiar with this.

- **"Double-dipping":** students must ensure that they are not using material submitted for any other assessment component as part of their EE submission—see the subject-specific guidance for more details.

Studies in language and literature: Subject-specific guidance

For a general introduction to undertaking an EE in studies in language and literature, see Studies in language and literature: An introduction. See also: *Extended essay guide* and *Extended essay teacher support material*.

Overview

An extended essay (EE) in studies in language and literature gives students an opportunity to undertake independent research into a topic of special interest to them within the subject. It is intended to promote advanced research and writing skills, intellectual discovery and creativity.

The essay is open to students who are writing in a language that they would be capable of offering as a language A.

It must be written in the language for which it is registered.

Students must **not** submit a group 1 EE in their group 2 language.

Studies in language and literature EEs are divided into three categories:

Category 1	Studies of one or more literary works originally written in the language in which the essay is presented.
Category 2	Studies of a literary work or works originally written in the language of the essay compared with one or more literary works originally written in another language. (The work originally written in another language may be studied in translation.)
Category 3	Studies in language based on one or more texts originally produced in the language in which the essay is presented.

Students and teachers must indicate at the point of upload which category of essay they are submitting. For example, English A Cat: 2; German A Cat: 3; Spanish A Cat: 1.

Categories 1 and 2

An EE in categories 1 and 2 gives students an opportunity to:

- study in depth a literary topic
- engage in independent literary criticism
- engage with established critical comment (where appropriate)

- develop the ability to put forward their views persuasively and in a well-structured manner, using a register appropriate to the study of literature.

Students must place their analysis of their chosen text(s) in the wider context of the discipline. This may include other literary texts, or particular critical perspectives or insights. However, this wider discussion should not detract from the main focus of their chosen text(s).

Category 3

A category 3 studies in language and literature EE gives students the opportunity to:

- demonstrate skills of textual analysis by considering how language, culture and/or context influence the ways in which meaning is constructed in texts
- examine critically the different relationships and interactions that exist between texts, audiences and purposes
- engage with established (or developing) critical writing, as appropriate
- develop the ability to put forward their views persuasively and in a well-structured manner, using a register and terminology appropriate to the subject.

Choice of topic

The EE may relate to work students have already completed during the course, but they must also demonstrate relevant wider reading and individual study.

It is the responsibility of the student to ensure that the topic of their EE does not overlap with any other work they are preparing for assessment in language A—for example, the written assignment in the literature course, or the written task in the language and literature course. Students risk their diploma if academic misconduct is detected.

Categories 1 and 2—literature

1. Studies of one or more literary works originally written in the language in which the essay is presented.
2. Studies of a literary work or works originally written in the language of the essay compared with one or more literary works originally written in another language. (The work originally written in another language may be studied in translation.)

Through the work they have already undertaken, students may have developed an interest they wish to pursue further, for example:

str

- a particular genre of writing
- a particular author
- a philosophical, political or social question addressed by a literary work.

Categories 1 and 2—appropriate texts

Students can choose literary works from any source, including the IB Diploma Programme prescribed list of authors.

Crucially, students' chosen text(s) should be of sufficient literary merit to sustain in-depth analysis.

Categories 1 and 2—examples of topics

These examples are just for guidance. Students must ensure their choice of topic is focused (left-hand column) rather than broad (right-hand column).

Examples of topics—category 1

Focused topics	Broad topics
The portrayal of marriages as imperfect in *Middlemarch* by George Eliot	Marriage in the novels of George Eliot
The use of comic characters to explore serious issues in Shakespeare's *Measure for Measure* and *King Lear*	Comedy in Shakespeare's plays
The role of autobiographical techniques and their effects on the reader in *Cómo me hice monja* by César Aira	Autobiographical details in *Cómo me hice monja*

Examples of topics—category 2

Focused topics	Broad topics
The importance of satire in the travels of the main characters in *Huckleberry Finn* and *Candide*	A comparison of the main characters in *Huckleberry Finn* and *Candide*
The treatment of the theme of love in a selection of Shakespeare's sonnets and *Veinte poemas de amor y una canción desesperada* by Pablo Neruda	A comparison of Shakespeare's sonnets and *Veinte poemas de amor y una canción desesperada* by Pablo Neruda

Category 3

Studies in language based on one or more texts originally produced in the language in which the essay is presented.

A category 3 EE emphasizes the production and reception of texts in social, historical and/or cultural contexts. Essays that simply offer a general overview of a topic are not appropriate.

Category 3—appropriate texts

For the purpose of a category 3 language EE, "texts" include the widest range of oral, written and visual materials present in society:

- single and multiple images with or without written text
- literary written texts and text extracts

- media texts, eg advertising campaigns; films, radio and television programmes and their scripts
- electronic texts that share aspects of a number of media texts, eg video-sharing websites, web pages, SMS messages, blogs, wikis and tweets
- oral texts, eg readings, speeches, broadcasts and transcripts 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 summary of the student's reading is not sufficient.

Where relevant to the topic, students may compare and contrast different languages and cultures. However, the essay's main focus should be the language and culture(s) of the language in which the student is writing.

Examples of topics—category 3

These examples are just for guidance. Students must ensure their choice of topic is focused (left-hand column) rather than broad (right-hand column).

Focused topics	Broad topics
The use of language and image by UK fashion and beauty magazines *Cosmopolitan*, *Glamour* and *Look* to construct a particular body image for women	The influence of the media in shaping the view of female beauty
The use of language and other persuasive techniques to confront the ideology of the United States by Malcolm X and other civil rights activists	Successful political campaigns
The use of humour by Kehlman in *Measuring the World* to bridge the distance between the present day reader and his historic subject matter	Humour in *Measuring the World*
The use of different reporting methods by various newspapers to cover Argentine protest marches	Argentine protest marches

Treatment of the topic

Students should use both primary and secondary sources for their research.

Primary sources refer to the novels, poems, stories, plays or essays by the author whose work is the focus of the student's research.

Secondary sources are scholarly works about:

- the primary author's work and biography
- the genre the student is focusing on
- literary techniques.

Secondary sources include:

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- books
- academic journal articles
- edited essays in book collections
- reviews incorporated in the publication that is the focus of the student's research.

Categories 1 and 2—literature

Students should always consider how the text(s) work as literature, dealing with aspects such as the effects they achieve, the devices they use and the way they are written.

Philosophical, political or social issues

Students can choose as their topic a philosophical, political or social issue arising from a work of literature. However, the major focus of their essay should be the literary treatment of the issue. They must not treat the literary work(s) simply as documentary evidence in a discussion of the particular issue.

In addition, students should not use the essay solely as a vehicle for their own thoughts on the issue. Students must focus first on their analysis of the presentation of the author's ideas. Then they can present their personal views on the way the author has treated the subject.

Use of literary criticism

Students should aim for a compromise between building on the wisdom of experienced critics and introducing new personal elements. An essay that simply repeats the views of established literary critics will not receive a high mark.

Use of literary biography

Essays that interpret literary works in terms of the writer's life tend to produce reductive readings based on second-hand information. Such essays receive low marks and the IB therefore advises students to avoid biographical topics.

Examples of topics, research questions and suggested approaches—category 1

Once students have identified their topic and written their research question, they can decide how to research their answer. They may find it helpful to write a statement outlining their broad approach. These examples are for guidance only.

Topic	**An exploration of evil as a motivating force in drama**
Research question	How effectively does Christopher Marlowe present his view of evil in *Dr Faustus*?
Approach	A detailed study of the play to include selected quotations to support the argument, with reference to secondary source material if appropriate.

Topic	**The treatment of prejudice in novels**
Research question	How far are the approaches to prejudice and discrimination different in *To Kill a Mockingbird* and *The Kite Runner*?

Approach	The identification of types of prejudice (religious, racial, caste, gender, as appropriate) in the novels and the selection of detailed incidents and/or character studies for close analysis. Some background research into 1950s America and Afghanistan between 1970 and the mid-1990s may be helpful in establishing a context for the argument and a comparative element to the discussion.

Topic	**Social criticism in Nicanor Parra's poetry**
Research question	Is there a change in Nicanor Parra's social criticism in *Poemas y antipoemas* and *Hojas de Parra*?
Approach	Using a selection of poems from two works of poetry written in two different moments in Parra's literary career (eg *Poemas y Antipoemas* and *Hojas de Parra*) this study will illustrate how social criticism has been embedded in Parra's work. The approach will focus on a selection of topics, themes and poetic techniques and his literary development using these two examples of early and later poetry from his career. This work will also use critical studies and other secondary sources that will help enlighten the approach of this research.

Topic	**The use of colour in Friedrich Dürrenmatt's play *Der Besuch der alten Dame***
Research question	How effective is Friedrich Dürrenmatt's use of colour to convey his message in the play *Der Besuch der alten Dame?*
Approach	An analysis and evaluation of colour symbolism in Dürrenmatt's play *Der Besuch der alten Dame*.

Topic	***Au retour des oies blanches* and classical tragedy**
Research question	What role do the patterns of classical tragedy play in Marcel Dubé's *Au retour des oies blanches*?
Approach	An analysis based on the claim by Michel Tremblay that influences of classical tragedy appear across Dubé's work. The essay will investigate classical tragedy and then carry out a detailed analysis of this particular work to support the argument.

Examples of topics, research questions and suggested approaches—category 2

Once students have identified their topic and written their research question, they can decide how to research their answer. They may find it helpful to write a statement outlining their broad approach. These examples are for guidance only.

Topic	**The portrayal of childhood in novels**
Research question	In what ways, and to what purposes, do Nabokov's *Speak, Memory* and Proust's *Swann's Way* evoke memories of childhood?
Approach	A close analysis of both works, with reference to secondary source material if appropriate, and some comparative element to the discussion

Topic	**The presentation of guilt in novels**
Research question	How important is the narrative structure to the way guilt is addressed by Bernhard Schlink in *The Reader* and Tim O'Brien in *The Things They Carried*?

Approach	A close analysis of both works, with reference to secondary source material if appropriate, and some comparative element to the discussion.

Category 3—language

Students should give focused and critical attention to the text or texts being considered. The approach should aim to be balanced, coherently argued, and illustrated by relevant supporting examples.

Students are encouraged to:

- adopt an analytical, critical position
- show awareness of potentially conflicting viewpoints on the text(s) and their meaning in a wider social context.

Their analysis must include a wider discussion of the contexts in which the text(s) are produced and understood.

Essays that attempt to interpret the text(s) without considering the original audience and context are unlikely to offer a fully successful discussion.

Examples of topics, research questions and suggested approaches—category 3

The examples are just for guidance. Apart from examples 1 and 7, each specifies a particular language so that the research question is precise. However, they may also work in another language and context.

Examples 1, 2 and 3—language in a cultural context

Students can 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.

Topic	**Gender**
Research question	How has the portrayal of men in male grooming products changed from the 1980s to date?
Approach	A careful analysis of the contexts and the devices employed in at least two specific advertising campaigns in the target language culture, with some comparative element to the discussion.

Topic	**Language and communities**
Research question	How do the Spanish press present controversies that happen during the Real Madrid and Barcelona derbies?
Approach	A careful analysis of the emotive language used to describe the controversial moments from the Barcelona and Madrid press (*El País*, *El Periódico de Catalunya*, *Marca*, *As*, *El Mundo*) focusing on a particular season. There will be an evaluation of the social and political stances taken by the different newspapers and an analysis of bias.

Topic	**Language and communities (nation/region, subcultures)**

Research question	How are second and third generation Turkish young people portrayed in the German media?
Approach	A careful analysis of and comparison between three different media forms from a variety of viewpoints. There will be a focus on the nature of the language used to portray second and third generation Turkish youth (15–25 years old).

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.

Topic	**Language and presentation of speeches**
Research question	To what extent does Cristina Fernández de Kirchner use rhetorical devices to criticize international vulture funds?
Approach	A careful analysis of the contexts and the rhetorical devices used by Fernández de Kirchner in a select handful of speeches in which she criticizes international vulture funds, with some comparative element to the discussion.

Topic	**The use of persuasive language in motivational speeches**
Research question	By what means do Steve Jobs and Martin Luther King seek to inspire their particular audiences?
Approach	A careful analysis of the contexts and the rhetorical and emotive devices employed in Steve Jobs' Stanford University graduation commencement ceremony speech (2005) and Martin Luther King's "I Have a Dream" discourse (1963), with some comparative element to the discussion.

Topic	**News coverage**
Research question	How do different newspapers vary in their reporting methods of racist incidents in English league football?
Approach	A careful analysis of the emotive language used to describe specific incidents of racism in football as reported in daily newspapers (eg *The Guardian*, *Daily Telegraph*, *Daily Mirror* and a sports publication) and an evaluation of how far the stance taken on this issue is representative of each newspaper's social, political and class bias.

Topic	**Textual bias**
Research question	How do different newspapers vary the way they convey their political views in their editorials?
Approach	A careful analysis of the contexts and the language (choice of key words, rhetorical devices) used by two leading newspapers *Asahi* and *Yomiuri* issued on the 3rd of May, The Institutional Day (Japanese national holiday to commemorate their peaceful post-war Constitutional Law) for the past five years, with comparative elements to the discussion.

Interpreting the EE assessment criteria

Criterion A: Focus and method

(Strands: Topic, Research question, Methodology)

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For all three categories of studies in language and literature essays, the term "research" should be interpreted as "research material(s)" or "area of investigation" or "the topic under investigation".

In terms of the choice of topic, the research question must be specific and sharply focused and stated clearly in the introduction of the essay. It should be formulated as a question, not a statement or proposition for discussion. Its purpose should be made clear to the reader and be related to the knowledge and understanding in context.

Overly broad topics that cannot be dealt with adequately within the scope of the word limit should be avoided. Similarly, too obvious a topic is unlikely to score highly in terms of criterion C.

The introduction should state briefly why the student has chosen that particular research question and what it has to offer. It should also indicate clearly how it relates to existing knowledge on that topic.

The subsequent planning of the essay and its focus for discussion should involve analysis of the text(s) in the light of the research question. Students may also include a critical perspective on secondary source material so that the views of critics are used to support the students' own arguments. The sources used must provide sufficient material to develop and support an argument and a conclusion relevant to the research question.

- For **categories 1 and 2 essays**, appropriate sources include the literary text or texts that form the focus of the investigation and, where appropriate, secondary sources such as published criticism on those texts.
    - In both these categories, students should be aware that they may be limiting themselves by choosing texts that are not capable of sustaining a detailed in-depth literary analysis, eg some types of children's literature or teenage fiction.
- **Category 2 essays** should include a brief rationale for the pairing of the texts chosen, indicating what might be gained from the comparative study being undertaken. Students should avoid taking an approach where such texts are dealt with in two separate discussions.
- **Category 3 language essays** based on a primary text or texts from the range indicated in the subject guide should also use secondary sources to provide a framework for a critical analysis of how language, culture and context shape meaning.

Criterion B: Knowledge and understanding

(Strands: Context, Subject-specific terminology and concepts)

For all three categories of essay, supporting source materials should be chosen appropriately and used effectively and purposefully to demonstrate an understanding of the wider issues involved.

Clarity and precision of communication in a studies in language and literature essay includes the correct use of language. Students should be able to convey their ideas fluently and articulately. They should also be able to use subject-specific terminology appropriate to the discipline and apply it to their chosen topic with discernment.

- 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: the quality of the student's understanding of the primary text is the main concern. The use of secondary source materials is helpful in terms of establishing a wider framework for the discussion; however,s this should not replace the student's personal engagement with the primary text(s).
- For **category 3 language essays**, the introduction of the essay should focus on the chosen topic and how it relates to existing knowledge of that subject and/or why it is of special interest to the target language and/or culture. The text(s) should be explored and understood through a critical consideration of their specific cultural and/or linguistic background. The student's personal experience or personal opinion should only be included if relevant to a discussion of, for example, the target audience for the text, and not as unsupported assertion.

Criterion C: Critical thinking

(Strands: Research, Analysis, and Discussion and evaluation)

For all three categories of studies in language and literature essays, the analysis and argument should focus on the research question and support a personal interpretation.

Students should aim for a detailed and critical consideration that develops their own argument rather than simply adopting the views of critics. Second-hand interpretations or viewpoints that are derived solely from secondary sources, or purely descriptive essays, will not score highly.

The essays must focus on the analysis of the research material presented. Personal views should not simply be stated but need to be supported by reasoned argument.

The conclusion should present a considered evaluation of the topic in the light of the discussion as well as findings or results from the research (as appropriate).

Students are also encouraged to take a critical perspective on secondary sources: in particular, if students make use of internet-based sources, they should do so critically and circumspectly in full awareness of their potential unreliability.

- 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.
- This also applies to **category 3 language essays** that give only straightforward descriptive or narrative accounts of a text or texts that lack critical analysis.

Criterion D: Presentation

(Strands: Structure, Layout)

This criterion relates to the extent to which the essay conforms to current academic standards concerning the presentation of research papers. It also relates to how well these elements support the reading, understanding and evaluation of the essay.

Essays in studies in language and literature would normally be presented as a continuous body of text, although some category 3 topics may benefit from a section and sub-section structure to their essays, with appropriate informative headings.

The use of charts, images and tables may also be appropriate for category 3 essays. They should only be used if they are directly relevant to the research question, contribute towards the understanding of the argument and are of a good graphic quality.

Any material that is not original must be carefully acknowledged, with specific attention paid to the acknowledgment and referencing of quotes and ideas. This acknowledgment and referencing is applicable to audio-visual material, text, graphs and data published in print and electronic sources. If the referencing does not meet the minimum standard as indicated in the guide (name of author, date of publication, title of source and page numbers, as applicable), and is not consistently applied, the work will be considered as a case of possible academic misconduct.

A bibliography is essential and has to be presented in a standard format. Title page, table of contents, page numbers, etc must contribute to the quality of presentation.

The essay must not exceed 4,000 words of narrative. Graphs, diagrams or other illustrative material are not included in the word count. Students should be aware that examiners will not read beyond the 4,000-word limit, nor assess any material presented thereafter.

Criterion E: Engagement

(Strands: Process, Research focus)

This criterion is applied by the examiner at the end of the assessment of the essay, after considering the student's *Reflections on planning and progress Form* (RPPF). It assesses the overall impression the examiner has with regard to the student's engagement with the research process and their subject area.

Students are expected to provide reflections on the decision-making and planning process undertaken in completing the essay. Students must demonstrate how they arrived at a topic as well as the methods and approach used. This criterion assesses the extent to which a student has evidenced the rationale for decisions made throughout the planning process and the skills and understandings developed.

For example, students may reflect on:

- the approach and strategies chosen, and their relative success
- the *Approaches to learning* skills they have acquired and how they have developed as a learner
- how their conceptual understandings have developed or changed as a result of their research
- setbacks faced in their research and how they overcame these
- questions that emerged as a result of their research

- what they would do differently if they were to undertake the research again.

Effective reflection highlights the journey the student has engaged in through the EE process. In order to demonstrate that engagement, students must show evidence of critical and reflective thinking that goes beyond simply describing the procedures that have been followed. Reflections must provide the examiner with an insight into **student** thinking, creativity and originality within the research process. The **student** voice must be clearly present and demonstrate the learning that has taken place.

Language acquisition, including classical languages

An extended essay (EE) in language acquisition or classical languages gives students the opportunity to pursue their interest in language.

Students working on a language acquisition EE must demonstrate an in-depth understanding of the language, culture and society or literature studied. This understanding must be shown in the form of:

- an analysis of a cultural context or a specific text
- an analysis of trends in the culture studied and the impact of a cultural change on the form or use of the language
- an analysis and comparison of literary texts.

For those undertaking a classical Greek or Latin EE, the focus is on demonstrating an understanding of a relevant or significant aspect of the language, literature and civilization of ancient Greece or Rome.

For a longer general introduction to undertaking an EE in language acquisition, see Language acquisition: An introduction.

Language acquisition: Subject-specific guidance

See also: *Extended essay guide* and *Extended essay teacher support material*.

Overview

An extended essay (EE) in language acquisition gives students an opportunity to:

- develop their awareness and knowledge of the target language they are studying
- demonstrate their understanding of the culture associated with their target language.

The essay requires students to carry out 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
- specific cultural artifacts, for example works of fine art, architecture, films, radio or television programmes, or lyrics from popular music.

The essay is intended for students who are studying a second modern language. It must be written in the language for which it is registered (the target language) and focus on matters related to the target culture.

Students may **not** write a language acquisition EE in a language that they are studying for their Diploma Programme as language A literature, or language A studies in language and literature.

Students are assessed on the basis of their skills in research and analysis, not their language proficiency.

Language acquisition EEs are divided into three categories:

Category 1	A specific analysis of the language (its use and structure), normally related to its cultural context or a specific text.
Category 2	A sociocultural analysis of the impact of a particular issue on the form or use of the language: (a) based on an examination of language use (b) an essay of a general cultural nature based on specific cultural artifacts.
Category 3	An analysis of a literary type, based on a specific work or works of literature exclusively from the target language.

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Cultural artifacts

For 2(b), "cultural artifacts" include anything concrete or tangible that helps to give insight into the target culture and language, such as:

- **written documents:** newspapers, magazines, news headlines, articles, books (other than literary), cartoons, adverts, leaflets, brochures or manifestos, laws or policies, historical documents or records
- **spoken documents:** screenplays, radio or television programmes, song lyrics, interviews
- **visual documents:** works of fine art, architecture (buildings, monuments, etc), films, stamps
- **cultural icons:** fashion items and accessories (as a manifestation of culture), food items, dishes (as a manifestation of culture), brands (as a manifestation of culture).

The following do not qualify as cultural artifacts: political events (elections, referendums), historical events, social movements (eg riots), social issues (unemployment, immigration, racism, school violence, the role of women in country X, etc), towns or regions ("travel guide" essays), (minority) ethnic groups, media trends, styles of music, sports, traditions, institutions (school systems, political parties, etc).

Students must write their essay's category on the essay coversheet, alongside the subject in which it is registered, eg English B Cat: 2 (b); German B Cat: 3.

Students undertaking the language acquisition EE must have sufficient proficiency in the language to be able to address the assessment criteria. However, superior fluency is neither a prerequisite nor a guarantee of success. The EE requires students to demonstrate skills in research rather than language.

Students who are fluent in the language but who do not demonstrate research skills will score lower than students who are less fluent but fulfill the other assessment criteria.

Choice of topic

Students can pursue their interest in the language through research based on texts (spoken or written records of the language) or specific cultural artifacts, a requirement for the category 2(b) essay.

The essay should consist of the study of an issue in one of the three categories: language, culture and society or literature, or a combination of these.

Students must ensure that the materials they require for their choice of topic do not overlap significantly with any other work they are submitting for the Diploma Programme. For example, they must not use:

- a novel in its original form that they studied in translation for language A: literature.
- the same aspects of a film for coursework in film.

Students risk their diploma if academic misconduct is detected.

Examples of topics

These examples are just for guidance. Students must ensure their choice of topic is focused (left-hand column) rather than broad (right-hand column).

Focused topics	Broad topics
An analysis of the way in which Swahili is adapting to accommodate the language of technology	A history of Swahili
What does rap music tell us about contemporary German culture? An analysis of the rap lyrics of Bushido and Sookee (alias Nora Hantzsch)	Rap music in Germany
How do we deal with death? An evaluation of the treatment of the theme of death in Eric-Emmanuel Schmitt's novella *Oscar et la Dame Rose*	An evaluation of Eric-Emmanuel Schmitt's novella *Oscar et la Dame Rose*

Treatment of the topic

The research and writing process

- Language acquisition EEs can require more planning than those written in a student's first language.
- Students should read and annotate secondary material written in the target language as this will help with vocabulary and expressions when they come to write the essay. Writing their annotations in the target language will also help.
- Students should draw up a section-by-section essay plan. They should then spend some time gathering:
  - the information they wish to include
  - the vocabulary and structures in the target language they require to convey this information.
- Students should seek guidance from their EE supervisor and/or language teacher regarding the conventions for academic writing that are particular to the target language.

Analysis of primary and secondary sources

Students should be engaged with the analysis of **primary** and **secondary** sources.

Primary sources

This refers to original texts and can be any occurrence of "communicative language".

- Literary—eg books, book chapters, novels, essays, poems, stories, plays.
- Media—eg interviews, discussions, newspaper headlines, articles.
- General—eg historical documents, speeches, advertising, theatre, informal conversations.

Secondary sources

This refers to a scholarly work written about the student's primary source.

Secondary sources include books, journal articles, essays and reviews of the primary author's work. They may also include writing about the author's life, or the genre and techniques relevant to the student's primary source(s).

Culture

If their topic is of a general cultural nature, students should focus on what makes the topic specific to the region, country or countries concerned.

Students can make comparisons with another culture if this helps to answer the research question. However, they must remain focused on the culture of their target language.

Use and analysis of texts

Students may choose to:

- analyse texts in a detailed literary fashion, or
- use literary texts as a means of exploring the target language or its culture and society.

Quantitative research methods

If students use questionnaires or present statistics, they must show that they:

- understand how the questions were constructed
- can explain the results.

The students must be able to analyse and interpret these results with direct reference to their topic. An example of any questionnaires or surveys used should be included as an appendix.

Photographs and illustrations

Students must label and explain any photographs and illustrations they include. They must also justify their use in relation to the topic.

Examples of topics, research questions and suggested approaches

Once students have identified their topic and written their research question, they can decide how to research their answer. They may find it helpful to write a statement outlining their broad approach. These examples are just for guidance.

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.

Language	French
Topic	**Idiomatic expressions: geographic influence on the French language**
Research question	To what extent does geography influence the use of French idiomatic expressions?
Approach	An investigation into the use of idiomatic expressions in Francophone countries that reflect the local geography.

Language	Mandarin

Topic	**The influence of information technology on Mandarin vocabulary**
Research question	How has the common terminology of information technology been incorporated into everyday Mandarin?
Approach	A study of the use of foreign terms compared to native terms in information technology and how those terms have become accepted in standard Mandarin.

Language	Spanish
Topic	**Social differences: the use of the diminutive (–ito) form in Quito**
Research question	To what extent is the extensive use of the diminutive –ito in Quito, Ecuador, a reflection of class and/or ethnic differences?
Approach	An investigation into the use of the diminutive form in daily conversations among local inhabitants of Quito, Ecuador.

Category 2—culture and society

2(a): Essays of a sociocultural nature about the impact of a cultural change on language

The essay should consist of a cultural analysis of the impact of a particular issue on the form or use of the language.

Language	Arabic
Topic	**The effects of globalization on language and social media in the Middle East**
Research question	How has the globalization of social media like Twitter affected the increased usage of political language among students in two international schools in the Middle East?
Approach	An examination of the use of political concepts and terminology by international students in the Middle East through engagement in social media like Twitter.

Language	Japanese
Topic	**The relationship between language and changes in society: the case of the Japanese family**
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.

Language	Dutch
Topic	**The language of discrimination in Dutch popular media**
Research question	How do the various terms used to refer to foreigners and immigrants in popular media reflect various shades of discrimination in Dutch society?
Approach	A socio-linguistic investigation into the connotation of the various terms for immigrants and other non-Dutch people used widely within Dutch society that reflect shades of discrimination towards particular racial or ethnic groups.

2(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 be specific to a country or community where the language is spoken. Topics that are too broad and could apply to many cultures (such as globalization, the death penalty or eating disorders) are inappropriate.

Essays of a general cultural nature must be based on specific cultural artifacts.

Language	Portuguese
Topic	**Social tension in Brazil in the 1960s as depicted in the lyrics of selected popular protest songs performed by Zelia Barbosa**
Research question	To what extent did songs of protest reflect the growing social tensions in Brazil under the military dictatorship in the 60s?
Approach	An investigation into the thematic content of Brazilian protest songs.

Language	Japanese
Topic	**Women's traditional roles in Japan and the role the media plays in perpetuating them**
Research question	To what extent are Japanese advertisers perpetuating traditional views of women's roles in Japanese society?
Approach	An analysis of the role of women in television adverts shown at peak family viewing times.

Language	English
Topic	**Racial profiling and the perpetuation of stereotypes: a case study of the Arizona Senate Bill 1070**
Research question	To what extent does Arizona Senate Bill 1070 and other similar legislation in Arizona reflect the state's targeting of specific minorities for "profiling", thus perpetuating common stereotypes?
Approach	An analysis of Arizona Senate Bill 1070 as a catalyst for racial profiling of Mexicans in Arizona.

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.

Language	French
Topic	**North African symbolism in *L'Etranger* by Albert Camus**
Research question	How does Camus use sensory imagery in his novel *L'Etranger*?
Approach	An analysis of the images of the setting and physical elements that reveal the emotional distance of Meursault.

Language	Japanese
Topic	**Mystery and suspense: an examination of Akagawa's novel ####### (*Mikeneko Holmes*)**
Research question	How does Jiro Akagawa create suspense in the detective novel####### (*Mikeneko Holmes*).
Approach	A commentary on the techniques used by the author to create suspense and thereby intensify the element of mystery in####### (*Mikeneko Holmes*).

Language	Spanish
Topic	**The use of narrative voice in Mexican novels**
Research question	How does Juan Rulfo effectively use both first and third person in his novel *Pedro Páramo* to merge the worlds of the living and the dead?
Approach	A textual analysis to reveal the narrative techniques used by the author to create the "magical" atmosphere of the novel.

Interpreting the EE assessment criteria

Criterion A: Focus and method

(Strands: Topic, Research question, Methodology)

The research topic must be defined in the form of a sharply focused question stated early in the essay and on the cover page. The purpose of the research investigation must be outlined in the introduction and should clearly fit one of the three required categories for language acquisition EEs. The methodology used, or the approach to the topic chosen, should also be addressed early in the essay. The student's personal experience or personal opinion is rarely relevant here.

For **category 1 (language) and category 2 (culture and society) essays**, the introduction must make clear how the chosen topic is specific or of special interest to the target culture and/or language . Overly broad topics on society, social movements or general media issues should be avoided.

For **category 3 (literature) essays**, the research question is an analysis of a literary type and all texts considered must be originally written in the target language. It is not necessary that the setting or subject matter be directly related to the culture. For example, *Romeo and Juliet* is set in Italy. It is, however, also possible to approach a category 3 essay considering the cultural context of the society for which it is written.

A clear and precisely stated research question, evidence of a well-informed logical treatment of the topic and an appropriate approach or method of study all contribute to constructing a well-planned essay.

Criterion B: Knowledge and understanding

(Strands: Context, Subject-specific terminology and concepts)

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Students must consult authentic reference materials, mainly, but not exclusively, written in the target language, depending on the category of essay being undertaken. Students need to demonstrate an ability to use appropriate material from their sources and references in order to demonstrate their knowledge and understanding of the topic within its cultural context. Students should strive to integrate primary and secondary material to inform the wider context and implications of the question. For all three essay categories, when considering the wider context, historical or biographical background need only be included if directly relevant to the research question. Students should strive to make relevant cultural connections where appropriate.

For **category 1 (language) and category 2 (culture and society) essays**, this knowledge must be based at least partially on primary sources. Primary sources can be chosen from, for example, specific cultural artifacts such as advertisements, song lyrics and legal documents, or from a variety of texts such as poems, graphic novels, and brochures or pamphlets.

For **category 3 literature-based essays**, all primary texts analysed must have originally been written in the target language. While secondary sources may help provide a framework, the quality of the student's understanding of the primary text(s) forms the main focus of the analysis.

The use of language must be appropriate to the topic and category chosen. For example, a category 3 essay should contain reasonable use of expected literary terminology in the analysis of the work(s).

Effective communication in language acquisition EEs includes reasonably correct use of vocabulary, sentence structure and grammar, as well as the selection of a register and style appropriate to the chosen topic. However, the mark awarded for criterion B is not a mark for grammatical accuracy. Whether a style is appropriate or not depends on common practice in the specific target language or culture. For example, it would be reasonable to expect more use of the passive voice in a German B extended essay than in a French B extended essay.

Criterion C: Critical thinking

(Strands: Research, Analysis and Discussion and evaluation)

Students should give their essays depth by developing an argument based on the research that results in relevant, meaningful conclusions that are consistent with the evidence presented. Personal views or assertions should not simply be stated, but need to be supported by evidence and reasoned argument. Critical thinking in this context will show knowledge and use of persuasive analysis and argument to support the interpretation or point of view expressed. Second-hand interpretations or viewpoints that are derived solely from secondary sources, or are purely descriptive or narrative in nature, will not be rewarded.

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

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

Appropriate research should involve interrogating primary and secondary sources in light of the research question, so that the views of others are used to support the student's own argument and do not serve as a substitute for that argument. Students are encouraged to look critically at the secondary sources that they read. For example, it may be helpful for a student to challenge a statement by a critic instead of simply accepting 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: Presentation

(Strands: Structure, Layout)

This criterion relates to how closely the EE conforms to accepted academic standards for the way in which research papers should be presented. It also relates to how well these elements support the reading, understanding and evaluation of the essay.

Students may provide a section and sub-section structure to their essays with appropriate, informative headings. This will be dependent on the particular stylistic conventions of individual languages and category of essay chosen; thus, students need to be aware of the appropriate format for their chosen subject.

Use of charts, images and tables

Any visuals must be prudently selected and used only if clearly relevant to the topic being discussed.

Students should be careful not to think that images and charts speak for themselves. Any illustrative material used within the body of the essay to help clarify an argument needs accompanying discussion or analysis in order to be effective. If analysing an advertising campaign, for example, the student may find it useful to include the image within the text for easy reader reference and to aid the flow of the essay.

Students must not include illustrative material in the appendices if they are relevant to the analysis, discussion or evaluation of the essay—they must be contained within the body of the essay. There should be no addition of superfluous material as appendices as examiners will not refer to this material.

Any material that is not original must be carefully acknowledged, with specific attention paid to the acknowledgment and referencing of quotes and ideas. This process is applicable to audio-visual material, text, graphs and data published in print and electronic sources. If the referencing does not meet the

minimum standard as indicated in the guide (name of author, date of publication, title of source and page numbers as applicable), or is not consistently applied, the work will be considered as a case of possible academic misconduct.

A bibliography is essential and has to be presented in a standard format. Title page, table of contents, page numbers, etc must contribute to the quality of presentation.

The essay must not exceed 4,000 words of narrative. Graphs, figures, calculations, diagrams, formulae and equations are not included in the word count. Students should be aware that examiners will not read beyond the 4,000-word limit, or assess any material presented past this point.

Criterion E: Engagement

(Strands: Process, Research focus)

This criterion is applied by the examiner at the end of the assessment of the essay, after considering the student's *Reflections on planning and progress Form* (RPPF). It assesses the overall impression the examiner has with regard to the student's engagement with the research process and their subject area.

Students are expected to provide reflections on the decision-making and planning process undertaken in completing the essay. Students must demonstrate how they arrived at a topic as well as the methods and approach used. This criterion assesses the extent to which a student has evidenced the rationale for decisions made throughout the planning process and the skills and understandings developed.

For example, students may reflect on:

- the approach and strategies chosen, and their relative success
- the *Approaches to learning* skills they have acquired and how they have developed as a learner
- how their conceptual understandings have developed or changed as a result of their research
- setbacks faced in their research and how they overcame these
- questions that emerged as a result of their research
- what they would do differently if they were to undertake the research again.

Effective reflection highlights the journey the student has engaged in through the EE process. In order to demonstrate that engagement, students must show evidence of critical and reflective thinking that goes beyond simply describing the procedures that have been followed. Reflections must provide the examiner with an insight into **student** thinking, creativity and originality within the research process. The **student** voice must be clearly present and demonstrate the learning that has taken place.

Classical Greek and Latin studies: Subject-specific guidance

Overview

An extended essay (EE) in classical Greek or Latin gives students the opportunity to investigate in depth non-trivial controversial topics within studies of the ancient Greek and Roman worlds.

Language requirements

Students will submit their essay in either English or Spanish, depending on their language of registration.

The essay requires students to engage with sources written in classical Greek and Latin, so they must also have sufficient proficiency in these.

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.

Controversy in scholarly opinion helps the students to find academic works related to the topic, enabling them to build and develop an argument.

Students may choose to focus on some aspect of:

- classical Greek or Latin language or literature, or
- classical Greek or Roman culture and civilization.

The topic must allow students to demonstrate the interwoven nature of the relationship between language, literature and the culture and civilization. However, since the language, literature, and culture 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. In other words, students who focus on culture and civilization must show a connection to the language or literature of classical Greek or Latin. It is not appropriate for a student to simply focus on the culture or civilization in isolation from the language or literature.

Examples of topics

These examples are just for guidance. Students must ensure their choice of topic is controversial and focused (left-hand column) rather than non-controversial and broad (right-hand column).

Focused topics	Broad topics
The opening of Thucydides' history is a valid model for subsequent historians to aspire to	An examination of whether the purpose of Thucydides's history is revealed by its opening
The Melian debate, as presented by Thucydides: the true nature of Athenian democracy, or an atypical aberration	Thucydides' presentation of the Melian episode

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Focused topics	Broad topics
The relevance of the autobiographical in an analysis of Catullus' poetry	Catullus' love poetry
Cicero's *First Catilinarian* effectively argues for Catiline's execution	Rhetorical techniques in the *First Catilinarian*

Treatment of the topic

Students will normally answer their research question by investigating appropriate texts and scholarly works on their chosen topic. Students should use these texts and commentaries as references in the essay.

They can also use other source material such as works of art, architecture and material culture if they help answer the question.

Language-focused essays

Students must show that they understand the morphology and syntactic structure of the language and how these elements are used within particular text(s).

Students must also link the language to the texts' cultural and historical background.

Literature-focused essays

Students must show an awareness of a work read, at least partly, in the original Greek or Latin.

Their essay should show they understand how the author uses the language to create particular effects, eg in terms of style.

Wherever relevant to the argument, students must identify, analyse and evaluate links between the language, literature and culture.

Culture- and civilization-focused essays

Students must show an understanding of both historical and cultural context and how studying the language and literature helps foster that understanding.

Students must establish the historical and cultural context of their topic. This is best done through appropriate references to art, literature or archeological sources. Secondary reading is therefore an essential part of the research process.

To meet all the assessment criteria for the EE students must engage in critical thinking. This means that they must analyse, discuss and evaluate the material that they present.

Examples of topics, research questions and suggested approaches

Once students have identified their topic and written their research question, they can decide how to research their answer. They may find it helpful to write a statement outlining their broad approach. These examples are for guidance only.

Topic	**Creating a dream-like atmosphere: the use of language in *Aeneid***
Research question	How effectively does Virgil's use of language in *Aeneid* VI (lines 1–294) anticipate the dream-like atmosphere of his Underworld?
Approach	A textual analysis of the use of language and poetic techniques to anticipate the description of the Underworld in Virgil's *Aeneid*.

Topic	**Religious architecture in Augustus' Rome: the prominence of temples**
Research question	Why did Augustus give temples such prominence in his building programme?
Approach	A thematic and historical analysis of Augustus' building programme including an analysis of some sources in Latin.

Topic	**The development of Attic "Middle Comedy"**
Research question	Is Aristophanes' *Ecclesiazusae* the first example of Greek Middle Comedy? Why or why not?
Approach	An evaluative analysis of the *Ecclesiazusae* with respect to the structures and tropes of Attic Old and Middle Comedy.

Topic	**The portrayal of the Trojans as villains in the *Iliad***
Research question	To what extent are the Trojans portrayed as the villains of the *Iliad*?
Approach	An evaluative analysis of the way Homer portrays the Trojans in the *Iliad* and its implications.

An important note on "double-dipping"

Students must ensure that their EE does not duplicate other work they are submitting for the Diploma Programme. In particular, students of classical Greek or Latin should avoid overlap between their individual study and EE.

For example, a student whose individual study investigates Roman agricultural practices should not submit an EE examining the extent to which Virgil's *Georgics* promotes established farming techniques.

Differences between the EE and individual study		
	EE	Internal assessment
Research question	Controversial	Non-controversial
Treatment of the topic	Synthesis of content and evaluation of arguments from both primary and secondary sources to develop a full response to the research question.	Selection of primary sources relevant to the research question, supplemented by annotations.

Students risk their diploma if academic misconduct is detected.

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Interpreting the EE assessment criteria

Criterion A: Focus and method

(Strands: Topic, Research question, Methodology)

An essay in classical languages must focus on an aspect, usually a controversial one, of the ancient Greek or Roman world. The topic that is being investigated must be clearly and precisely focused and must be formulated as a question. Students should not work with a research question that is too broad, too vague or too limited in scope. The student must explain why the topic is worthy of investigation with depth and insight, considering always the historical and cultural context of the research question. 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. Controversy in scholarly opinion helps the students to find academic works related to the topic enabling them to build and develop an argument. The student should specify how the topic is going to be investigated, stating the method that is going to be used to gather the information and what kind of sources is the student gathering and why. The information and the sources gathered should be relevant and appropriate to the subject and to the research topic. The explanation for the methodology used should be convincing according to the topic that is being investigated.

Criterion B: Knowledge and understanding

(Strands: Context, Subject-specific terminology and concepts)

The essay should show clear evidence that the student knows and understands the significance of the topic. The essay should show full awareness of the areas of knowledge and understanding that will be brought into the foreground in the essay. The essay should show then clear evidence of knowledge and understanding of the historical context and/or cultural features that would be necessary to state in the essay to address the research topic in a meaningful way. The essay should also explain how the research question relates to existing knowledge on the topic. Knowledge and understanding of the topic should be communicated in a clear way using the language and the terminology that is apt to the subject in which the student is registered and to the topic that is being investigated. The student should make use of subject- and topic-specific terminology and should do this with accuracy and consistency avoiding general or personal un-specific remarks not based in any source.

Criterion C: Critical thinking

(Strands: Research, Analysis and Discussion and evaluation)

The student will consider carefully the range of resources available that are relevant and appropriate to the topic. The essay should show clear evidence of substantial background reading. Students should gather data that will help them to develop a well-argued discussion on the chosen topic. The data gathered should be the evidence found in the academic works and reference books or articles to establish the context and to support the argument and conclusion of the essay. Students should avoid presenting common knowledge on the topic, and lengthy and irrelevant material. Students should analyse and

discuss the research question avoiding at all costs merely describing or reporting, ie, merely telling things without developing an argument based on the data gathered. Students should be aware of the need to give their essays the backbone of a developing argument. Students should avoid personal views: all comments should be based on specific details and placed into context using references. The essay must show a solid foundation on specific relevant knowledge. 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. The analysis is developed through proper critical evaluation and discussion of the gathered information following an argument that is the backbone of any good essay.

Criterion D: Presentation

(Strands: Structure, Layout)

This criterion relates to the extent to which the essay conforms to accepted academic standards in relation to how research papers should be presented. It also relates to how well these elements support the reading, understanding and evaluation of the essay. Students may provide a section and sub-section structure to their essays, with appropriate informative headings if this fits with the particular conventions of individual disciplines. Students should be aware of the appropriate format for their chosen subject.

Use of charts, images and tables

In a classical Greek and Latin extended essay, any charts, images or tables from literature sources included in the essay must be carefully selected and labelled. For essays with a linguistic focus, charts and tables may be appropriate for demonstrating the relationship between certain words/structures. They should only be used if they are directly relevant to the research question, contribute towards the understanding of the argument, and are of a good graphic quality.

Any material that is not original must be carefully acknowledged, with specific attention paid to the acknowledgment and referencing of quotes and ideas. This acknowledgement and referencing is applicable to audio/visual, text, graphs and/or data published in print and electronic sources. Textual sources must be presented both in the original language and in translation whenever textual analysis is directly relevant to the argument, whereas they can be given in translation only when the reference is subsidiary and/or there is no textual analysis involved. For instance, a comparison of heroic epithets in Homer and Vergil must quote both the Greek and Latin originals and give a translation, whereas a reference to the disease spread by Apollo in book 1 of the Iliad can be given in translation in the context of an analysis of approaches to diseases in the ancient world. Translations can be taken from any published work or be the student's own—in both cases, they must be acknowledged. All Greek and Latin written sources must also be translated.

If the referencing does not meet the minimum standard as indicated in the guide (name of author, date of publication, title of source, and page numbers as applicable), and is not consistently applied, work will be considered as a case of possible academic misconduct.

A bibliography is essential and has to be presented in a standard format. Title page, table of contents, page numbers, etc, must contribute to the quality of presentation.

The essay must not exceed 4,000 words of narrative. Students should be aware that examiners will not read beyond the 4,000 word limit, nor assess any material presented thereafter.

Criterion E: Engagement

(Strands: Process, Research focus)

This criterion assesses the student's engagement with their research focus and the research process. It will be applied by the examiner at the end of the assessment of the essay, after considering the student's *Reflections on planning and progress Form* (RPPF).

Students are expected to provide reflections on the decision-making and planning process undertaken in completing the essay. Students must demonstrate how they arrived at a topic as well as the methods and approach used. This criterion assesses the extent to which a student has evidenced the rationale for decisions made throughout the planning process and the skills and understandings developed.

For example, students may reflect on:

- the approach and strategies they chose, and their relative success
- the *Approaches to learning* skills they have developed and their effect on the student as a learner
- how their conceptual understandings have developed or changed as a result of their research
- setbacks they faced in their research and how they overcame these
- questions that emerged as a result of their research
- what they would do differently if they were to undertake the research again.

Effective reflection highlights the journey the student has engaged in through the EE process. Students must show evidence of critical and reflective thinking that goes beyond simply describing the procedures that have been followed.

The reflections must provide the examiner with an insight into **student** thinking, creativity and originality within the research process. The **student** voice must be clearly present and demonstrate the learning that has taken place.

Individuals and societies

An extended essay (EE) in individuals and societies is intended for students who are interested in undertaking research in an area of business management, economics, geography, global politics, history, ITGS, philosophy, psychology, social and cultural anthropology or world religions.

The individuals and societies EE is intended to encourage the systematic and critical study of:

- human experience and behaviour
- physical, economic and social environments
- the history and development of social and cultural institutions.

Students' choice of topic should enable them to recognize that the content and methodologies of the subjects are contestable and that their study requires critical thinking.

Students must have sufficient grounding in the subject under which they submit their essay: reading a textbook or consulting an encyclopedia while writing the EE will not compensate for a lack of proper background knowledge.

For a longer general introduction to the subject areas of individual societies see Individuals and societies: An introduction

Business management: Subject-specific guidance

See also: *Extended essay guide* and *Extended essay teacher support material*

Overview

An extended essay (EE) in business management gives students an opportunity to carry out in-depth research in an area of personal interest relating to business management.

The EE gives students an opportunity to develop research skills by:

- reviewing business theories, concepts and principles
- critically analysing their use and application in the business world and their resultant impact on business activity.

The EE requires the application of business management theories, tools and techniques to produce a coherent and structured analytical essay that effectively addresses the research question.

Choice of topic

Students can choose a topic they have encountered during their Diploma Programme business management course. However, they may also choose to investigate issues that fall outside its scope. For example:

- business practices in a specific regional or national context, or
- the practical applications of the work of a particular business management theorist.

Whatever area they choose, students must root their research firmly in accepted business management theories and use the core principles of business management as the basis for their research.

Students are strongly advised to choose a topic that enables them to carry out research and apply business management theories and techniques in a real-world setting. This setting may be an organization, industry or market in a particular region or country, or globally.

Sources of ideas may include:

- an interest in issues raised in the classroom
- aspects of a student's own experience
- current events.

Research questions that do not allow a systematic and meaningful investigation using business management theories, concepts and principles are unlikely to be suitable.

Backward versus forward-looking questions

Students can choose to investigate past event(s). However, they must ensure that their question will enable them to analyse and evaluate rather than simply describe what happened.

A forward-looking question can enable students to search for conflicting sources to arrive at a well-supported argument and conclusion. But the topic should not be so forward-looking that information and results are not yet available: hypothetical questions based on future events are to be avoided.

Examples of topics

These examples are for guidance only. Students must ensure that their choice of topic is focused (left-hand column) rather than broad (right-hand column).

Focused topics	Broad topics
Application of lean production principles to the NGO ABC	Relevance of lean production for NGOs
Relevance of ethical objectives for very small and very large companies in Canada	The link between ethical objectives and organizational size
Use of Herzberg's motivation theory in productivity improvement at XYZ Ltd	Motivational techniques at XYZ Ltd
The contribution of Just-in-Time production in improving efficiency in the textile industry in Cambodia	Effectiveness of Just-in-Time production techniques

Treatment of the topic

Sources

Students' research should be broad and detailed, using a range of sources. Excessive reliance on a single source, such as a company's annual report, is unlikely to give students sufficient scope or breadth in their analysis.

Students can include materials sourced from a particular business or organization whose area of business is related to the topic chosen, eg market research companies, industry analysts or think tanks.

Secondary sources

Students should use secondary data as the basis of their EE, supported where appropriate by primary research. The sole use of secondary sources is permitted and will allow students access to all levels of the EE assessment criteria.

(Note that this is **similar** to the research approach of the SL internal assessment task of the business management course and **different** to the research approach of the HL internal assessment task, where primary research takes precedence.)

A good range of secondary sources should be consulted, including:

- business management textbooks
- general business management books
- industry analyses
- company reports and data.

Primary research

Students must plan any primary research well so that it yields genuinely additional and significant insights.

Students and supervisors are required to:

- act with tact and sensitivity towards the research subjects
- respect the confidentiality of the organization(s) and people involved.

All the research carried out must address the research question. Similarly, the development of the essay must be related to the research question directly and consistently and must not include information that is unnecessary.

Use of analytical tools and numerical data

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

Appropriate analytical tools from the business management syllabus include the following.

- Ansoff Matrix
- BCG Matrix
- Break-even analysis
- Decision tree
- Financial statements and ratio analysis
- Fishbone diagram
- Force field analysis
- Position maps
- Stakeholders analysis
- STEEPLE analysis
- SWOT analysis

Students may also use analytical tools that are not included in the syllabus.

Conceptual perspectives

Strategic and conceptual perspectives on the research question can add to the interest and rigour of the essay, for example:

- the effect of new technologies on organizational innovation
- the cultural and ethical implications of business decisions.

Analysing the data

Use of theory

Students should integrate relevant business management theories, tools and techniques with the evidence obtained by the research throughout the essay.

Students should not present theory as a separate section. An essay that delivers theory as a separate section of the essay and does not apply it to the specific research question is unlikely to succeed.

Students should avoid making assertions using business management theories and techniques if they cannot meaningfully link these to their case study with supporting evidence.

Critical thinking

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 students display the skills of analysis and evaluation, is essential.

Students should indicate unresolved questions, or new questions that have arisen from their study, in their conclusions.

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

Examples of topics, research questions and suggested approaches

Once students have identified their topic and written their research question, they can decide how to research their answer. They may find it helpful to write a statement outlining their broad approach. These examples are for guidance only.

Topic	**An evaluation of the introduction of total quality management in ABC Ltd**
Research question	To what extent has the introduction of total quality management (TQM) improved quality at ABC Ltd?
Approach	• A literature review of how quality management techniques have changed with the introduction of TQM, both generally and specifically in the industry of ABC Ltd. • Selection of relevant indicators measuring quality and collection of the corresponding data for ABC Ltd. • Analysis and evaluation of the ways in which ABC Ltd has adapted its approach to managing quality, and the impact of this on the selected indicators.

Topic	**An evaluation of the case for strengthening social responsibility practices at multinational XYZ**
Research question	Should multinational XYZ strengthen its corporate social responsibility practices in the aftermath of scandal X?
Approach	• A review of how various local and international media reported on the reasons for and events around scandal X at multinational XYZ. • Analysis of the social responsibility practices at multinational XYZ preceding scandal X, with a particular emphasis on practices and indicators relevant to scandal X. • Application of SWOT analysis to these practices. • Identification of potential ways of strengthening social responsibility practices from industry leaders. • Application of SWOT analysis to these practices. • Evaluation, from different stakeholder groups' perspectives, on whether multinational XYZ should strengthen its social responsibility practices in suggested ways or leave them as is.

Topic	**Measuring the success of joint ventures: a comparative case study**
Research question	How successful has the joint venture between ABC Ltd and XYZ Ltd been as a growth strategy for both companies?
Approach	• A literature review of the theoretical benefits and drawbacks of joint ventures. • A review on the reporting around the joint venture at the time it happened: what were the reasons given by the companies for the joint venture and how did industry analysts assess the case? • An examination of the financial results of ABC Ltd and XYC Ltd prior to and after the joint venture, and comparison of these results with industry benchmarks. • Analysis and evaluation of the qualitative and longer term benefits and drawbacks of the joint

	venture since the joint venture, in comparison with benchmarks in the industry.

An important note on "double-dipping"

Students must ensure that their EE does not duplicate any other work they are submitting for the Diploma Programme. In particular, the EE must not be an extension of the internal assessment task. Students must ensure that they understand the differences between the two.

- The HL IA task—a research project—must be based on primary research (eg interviews or questionnaires), whereas the EE must be based on secondary research (eg academic journal articles or specialized publications).
- The HL IA task is a practical and highly structured piece of investigation leading to practical proposals for action for company management, whereas the EE is a scholarly piece of investigation that does not result in the formulation of recommendations.
- The SL IA task—a written commentary—must be based on secondary research, like the EE, but for the SLIA task, only three to five supporting documents are required, whereas for the EE, there is an expectation of attempting a more academic, broader and in-depth investigation.

Supervisors play an important role here in guiding students on these distinctions. Students risk their diploma if academic misconduct is found.

Interpreting the EE assessment criteria

Criterion A: Focus and method

(Strands: Topic, Research question, Methodology)

The EE title must be stated in the form of a question that promotes the application of the higher order skills of analysis, evaluation and synthesis, rather than encouraging a descriptive essay.

The research question must be specific and sharply focused on a business problem or issue worthy of investigation. It should require the use of business management theories, tools and techniques. Topics that consider generic or broad issues will restrict the possibility of effective treatment within the word limit and will constrain performance on this criterion.

Students must use **secondary resources** in the first instance. Students should employ high-level academic research and writing skills, and show that the student is capable of intellectual discovery and creativity .

The essay should be based on a comprehensive review of the literature on the topic selected. It **must not** end up as a practical investigation resembling a higher level internal assessment.

Any essay based heavily on questionnaires and/or interviews will inevitably lose marks on a range of criteria.

If primary research is conducted it must provide information that is not accessible from secondary sources or that significantly enhances the value of the secondary data presented.

All research conducted, whether primary or secondary, should support specific quantitative and qualitative analysis and evaluation directly related to the research question.

Students must demonstrate that their essay has been well planned and that they have designed an appropriate and coherent approach and structure to address the research question.

Criterion B: Knowledge and understanding

(Strands: Context, Subject-specific terminology and concepts)

The sources collected by the student should be relevant to the research question and applied appropriately, so that an argument can be formed and a conclusion(s) reached. The student should use the sources to place their topic into a wider business context.

For example, if the focus of the essay is on the role of social media, the student should be able to explain the impact the social media has on a number of business functions, such as marketing and recruitment.

The student must demonstrate that they have a good grasp of business terminology and that they can use this fluently, accurately and consistently when developing lines of argument. They may need to clarify terms or provide further explanation or definition of selected terms or concepts.

Criterion C: Critical thinking

(Strands: Research, Analysis and Discussion and evaluation)

Throughout the essay, the student is expected to present and analyse business data and sources and to evaluate the insights and significance of these for addressing the research question. To score highly against this criterion, the student needs to demonstrate a sophisticated application of analytical and evaluative skills.

An integrated use of research and business theories, tools and techniques is required to develop an argument and to assess the strengths and limitations of various perspectives on the topic under investigation. Essays that are wholly or largely descriptive in nature will score poorly against this criterion.

The student should develop a reasoned, coherent and logical argument in response to the research question. Where appropriate, conclusions to points should be made throughout, and there must be at least one culminating conclusion that summarizes the student's response to the research question. Any judgments made should be consistent with the argument presented and supported by evidence.

The student should comment on the quality, balance and quantity of the sources and reflect on any bias or limitations that may weaken the strength or affect the objectivity of supporting materials.

The student should point out any limitations or unresolved issues in the research and suggest further action to address these.

Criterion D: Presentation

(Strands: Structure, Layout)

This criterion relates to the extent to which the essay conforms to accepted academic standards in relation to how research papers should be presented. It also relates to how well these elements support the reading, understanding and evaluation of the essay.

Students may provide a section and sub-section structure to their essays, with appropriate informative headings. sub-headings should not distract from the overall structure of the essay or argument presented.

Any graphs, charts, images or tables from literature sources included in essays must be carefully selected and labelled. They should only be used if they are directly relevant to the research question, contribute towards the understanding of the argument and are of a good graphic quality. Large tables of raw data collected by the student are best included in an appendix, where they should be carefully labelled.

Too many graphs, charts and tables detract from the overall quality of the communication. Only 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. Any tables should enhance a written explanation and should not themselves include significant bodies of text; if this is the case then these words will be included in the word count.

Students must take care in their use of appendices as examiners are not required to read them. All information with direct relevance to the analysis, discussion and evaluation of the essay must be contained in the main body of the essay.

Any material that is not original must be carefully acknowledged, with specific attention paid to the acknowledgment and referencing of quotes and ideas. This acknowledgment and referencing is applicable to audio-visual material, text, graphs and data published in print and electronic sources. If the referencing does not meet the minimum standard as indicated in the guide (name of author, date of publication, title of source and page numbers, as applicable), and is not consistently applied, work will be considered as a case of possible academic misconduct.

A bibliography is essential and has to be presented in a standard format. Title page, table of contents, page numbers, etc must contribute to the quality of presentation.

The essay must not exceed 4,000 words of narrative. Graphs, figures, calculations and diagrams are not included in the word count. Students should be aware that examiners will not read beyond the 4,000 word limit, nor assess any material presented thereafter.

Criterion E: Engagement

(Strands: Process, Research focus)

This criterion is applied by the examiner at the end of the assessment of the essay, after considering the student's *Reflections on planning and progress Form* (RPPF). It assesses the overall impression the examiner has with regard to the student's engagement with the research process and their subject area.

Students are expected to provide reflections on the decision-making and planning process undertaken in completing the essay. Students must demonstrate how they arrived at a topic as well as the methods and approach used. This criterion assesses the extent to which a student has evidenced the rationale for decisions made throughout the planning process and the skills and understandings developed.

For example, students may reflect on:

- the approach and strategies chosen, and their relative success
- the *Approaches to learning* skills they have acquired and how they have developed as a learner
- how their conceptual understandings have developed or changed as a result of their research
- setbacks faced in their research and how they overcame these
- questions that emerged as a result of their research
- what they would do differently if they were to undertake the research again.

Effective reflection highlights the journey the student has engaged in through the EE process. In order to demonstrate that engagement, students must show evidence of critical and reflective thinking that goes beyond simply describing the procedures that have been followed. Reflections must provide the examiner with an insight into **student** thinking, creativity and originality within the research process. The **student** voice must be clearly present and demonstrate the learning that has taken place.

Economics: Subject-specific guidance

See also: *Extended essay guide* and *Extended essay teacher support material*.

Overview

An extended essay (EE) in economics provides students with an opportunity to:

- undertake in-depth research in economics in an area of personal interest to them
- develop research skills
- apply economic theory to real-world situations
- make inferences based on real-world data
- 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 can choose a topic within any of the syllabus sections in the current *Economics guide*, but they are not restricted to these.

Use of economic theories, models and tools

Students should undertake an essay that uses the principles of economics as a basis for researching a particular topic. They may take a recent economic event, issue or policy, gather data and apply economic theories, models and tools to evaluate it.

Research questions that do not allow a systematic and meaningful investigation using economic theory and do not require critical analysis and detailed understanding are unlikely to be suitable in economics.

Multidisciplinary topics

It is essential that students answer the question using economic theories and concepts, and that the work does not diverge into another subject area. Some topics can be approached through different disciplines, such as business management, geography or psychology. Students must therefore ensure they use economic theories, models and tools and meet the subject requirements of economics.

Alternatively, if students wish to approach a topic from the perspective of economics and another discipline within the Diploma Programme, they can undertake an interdisciplinary World Studies EE .

Five-year rule

Topics should not be historical. They should relate to economic information, policies, outcomes or events that are no more than approximately five years old. Topics that are too retrospective, such as "What was the impact of the global financial crisis on unemployment in the United States from 2007–2010?" almost invariably become descriptive.

Essays should also not be based on future economic events. For example, "What will be the effect of the 2026 Football World Cup on the economy of Country X?" would not be suitable as it would be entirely speculative and unsupported.

Opportunities for analysis

The topic chosen should provide opportunities for some critical analysis of the information that is gathered. Students should avoid topics that depend entirely on summarizing secondary data, as they tend to lead to an essay that is essentially narrative or descriptive in nature.

Restricting the scope of the essay is necessary to ensure a clear focus, and will also provide opportunities for demonstrating detailed understanding of economics and critical analysis.

Suitable areas of economics

Macroeconomics topics may be chosen, but it is essential that the research question is narrowed to a reasonable focus on a particular part of the economy and is **not** on the economy as a whole.

Topics researching economic development are highly suitable, but the research question should relate to a particular aspect of development or a limited area. It would not be suitable, for example, to examine the effect of some government policy on the development of the whole economy.

Examples of topics

These examples are for guidance only. Students must ensure that their choice of topic is focused (left-hand column) rather than broad (right-hand column).

Focused topics	Broad topics
The effect of the recent imposition of a minimum wage in Austria on unemployment in the fast food industry in Graz	The effect of the minimum wage on unemployment in Austria
The effect of a fall in the exchange rate of the US dollar and its effect on the tourist industry in Carmel, California	How the fall in the exchange rate of the US dollar affected the US economy
The economic effect of water privatization on the farming industry in my region of Zambia	How the privatization of water affected Zambia

Treatment of the topic

Research question

Choosing a research question that is made up of more than one question (a "double-barrelled" research question) is unlikely to result in a successful essay—eg "Does Company X practice monopolistic behaviours and, if so, how does it help the firm to increase revenues" or "What is the effect of European 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 answer to the research question should not be self-evident. There must be scope to research the question and weave together an argument that is not obvious from the outset. For example, "To what extent is the market for mobile phone service in Country X an oligopoly" would not be appropriate when it is obviously an oligopoly as there are only three firms.

Research methods

Students can base their essay solely on secondary sources. They can also choose to undertake primary research.

Secondary sources

Students should consult a good range of secondary resources, including:

- economics textbooks
- general economics books
- research from think tanks such as the OECD or the New Economics Foundation
- government publications
- publications from international organizations such as the World Bank or UN bodies
- newspaper and magazine articles.

Primary research

For certain topics, primary research may enhance the approach, including:

- interviews
- surveys
- questionnaires.

Interviews with experts (face-to-face, virtual or electronic) in a given topic can be very beneficial, for example:

- university lecturers
- journalists
- government officials
- business people.

Where students undertake primary research, they must approach it in an academic manner.

- They must construct any surveys or questionnaires so that they gather meaningful, relevant data.
- Sample sizes must be large enough to generate statistically significant results.

When students have carried out surveys or questionnaires, they must:

- explain the process in their essay (How many people? Who? Where?)
- summarize and analyse the relevant results.

Pages of pie charts summarizing survey results are rarely appropriate.

Questionnaires based on speculative, anecdotal responses rarely, if ever, generate appropriate data and should not be used.

Use of theory

Students should integrate relevant economic theories, models and tools with the evidence obtained by the research throughout the essay. The theory should not be presented as a separate section. 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.

Students should never make assertions using economic theories, models and tools if they cannot meaningfully link these theories to their case study with supporting data or evidence.

Students can demonstrate their skills of analysis and evaluation by judging the extent to which a theory is valid or useful in answering the research question.

Examples of topics, research questions and suggested approaches

Once students have identified their topic and written their research question, they can decide how to research their answer. They may find it helpful to write a statement outlining their broad approach. These examples are for guidance only.

Topic	**Policy of plain cigarette packaging in reducing the negative externalities of cigarette consumption in Country X**
Research question	How effective has Country X's policy of plain cigarette packaging been in reducing the negative externalities associated with the consumption of cigarettes in Country X?
Approach	Theory to be researched in depth: • Negative externalities of consumption. Data to be gathered through secondary research (medical data, government data, newspaper articles): • External costs associated with smoking before the policy. • Changes in external costs since the policy. • Information concerning the government's reasoning/objectives. • Information concerning changes in consumption of cigarettes.

	Possible primary research: • Surveys/questionnaires to try to assess the extent to which consumption patterns were affected, trying to divide the market into different categories: long-term smokers, shorter-term smokers, young people who may be influenced before taking up smoking. • Interview with a government official, health economist or newspaper reporter covering the issue.

Topic	**Company X's abuse of monopoly power in the fast food industry of Country Y**
Research question	To what extent does Company X abuse its monopoly power in the fast food industry in Country Y?
Approach	Theory to be researched in depth: • Positive and negative outcomes associated with monopoly power. Data to be gathered through secondary (or primary) research: • Positive "behaviours" of Company X in terms of pricing, innovation, corporate social responsibility in Country Y. • Negative "behaviours" of Company X in terms of pricing, lack of innovation, anti-competitive behaviour in Country Y. • Articles in the newspapers about company activity. Possible primary research: • Interviews with customers to ascertain consumer satisfaction. • Email questions to representative of the country's competition commission to gather information about the company's competitive behaviour.

Topic	**Relationship between the official inflation rate of Country Y and wages of international school teachers in City X**
Research question	To what extent has the official inflation rate offered an accurate way to adjust the wages of

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	international school teachers in City X over the past four years?
Approach	Theory to be researched in depth: • How is inflation calculated in Country Y? • What are the limitations to the accuracy of official inflation figures? Data to be gathered through secondary research: • Composition/weighting of Country Y's consumer price index (CPI). • Changes in the country Y's CPI in the period in question. Possible primary research: • Interview with an HR representative of an international school in City X on how wages are determined; in particular, what is the role of the CPI? • Surveys/questionnaires to determine the weighting of items in an "average" international school teacher's basket of goods and services.

Topic	**Impact of mobile telephones on economic development in Country Y's Market Town X**
Research question	How has the increased use of mobile telephones contributed to economic development in a developing country market town?
Approach	Theory to be researched in depth: • Theories of economic development. • Characteristics associated with economic development. • The theoretical advantages of the use of mobile phones in developing countries. Data to be gathered through secondary research: • Challenges in the functioning of markets in Country Y prior to availability of mobile technology (NGO reports). • The ways in which mobile phones have changed the functioning of markets in Country Y and Market Town X (NGO reports, newspaper articles). Possible primary research:

	• Interviews with local market traders on how mobile phones have changed their ability to conduct business.

Topic	**Relationship between taxation of high-emission cars and purchases of low-emission cars in Country X**
Research question	To what extent has the recent (within the past three years) change to the indirect taxes on high-emission cars influenced buying of low-emission cars in Country X?
Approach	Theory to be researched in depth: • Theory of market failure in the context of car emissions: negative externalities of consumption and ways of remedying these; in particular, indirect taxes. • High-emission cars and low-emission cars as substitutes. Data to be gathered through secondary research: • Supporting evidence of the external costs of car emissions (government documents, newspaper articles, publications from environmental groups). • The extent to which the change in the tax policy was due to the goal of reducing emissions (government documents, newspaper articles). • Data on the numbers of low-emission cars sold before and after the tax policy. Possible primary research: • Interviews with managers of car dealerships on their views on the taxation change. • Interviews with new car buyers on their rationale for choosing a particular car.

An important note on "double-dipping"

Students must ensure that their EE does not overlap significantly with any other work they are submitting for the Diploma Programme. For example, the data gathered for an economics EE should not be used to fulfil the requirements of internal assessment tasks in other subjects.

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The economics EE and internal assessment

The internal assessment task (IA)—a portfolio of commentaries—may give students ideas for topics to research in depth, but the EE is not an extension of this task.

Students must ensure that they understand the clear distinction between the IA and the EE:

- Both allow students to apply economic theory to a particular real-world situation, but the IA is anchored in specific articles in the news media.
- In the EE, the student's topic and research question determine which economic theory it is relevant to explore; in the IA commentaries, the articles decide this.
- Both use secondary sources, but there is no expectation in the IA to consult sources beyond the specific news articles.
- There is no expectation of primary research in the IA.
- The tighter word limit of each IA commentary means that the 4,000-word EE is a study of much greater depth and breadth.

Supervisors play an important role in guiding students on these distinctions. Students risk their diploma if academic misconduct is found.

Interpreting the EE assessment criteria

Criterion A: Focus and method

(Strands: Topic, Research question, Methodology)

The topic and context of the economics extended essay must be clearly established at the beginning of the essay. This should include the theoretical area of economics to which the essay relates with a clear indication as to how the topic fits into this area and why it is worthy of investigation.

Students must express their topic in the form of a research question. The question must be specific, sharply focused and capable of being discussed effectively with the help of economic theory and within the word limit.

The question should not be "double-barrelled", ie made up of more than one question.

The research question should be genuine, requiring research to find an answer. That is, the answer to the research question should not be obvious.

Students must demonstrate that they have selected a suitable range of appropriate and relevant sources. This includes secondary research into the case study itself and relevant economic theory, including current or recent academic analysis in the area.

Students can choose to undertake primary research, such as interviews with relevant people with pertinent knowledge and background, or surveys and questionnaires. Surveys and questionnaires must be carefully planned and only elicit information that is relevant to the research question. The results must be based on an appropriate range of respondents and be statistically significant. Primary research is not a requirement.

In the early part of the essay, there should be an explicit methodology outlining the steps of the research and the nature of the data collection.

Five-year rule

If the topic relates to a specific event, issue or policy, it should date from within the past five years. It should not concern a future or hypothetical event.

Criterion B: Knowledge and understanding

(Strands: Context, Subject-specific terminology and concepts)

The essay must demonstrate an effective understanding of relevant economic theory and the way that this theory and the data gathered may be used to address the research question. All data and theory used in the essay should be clearly relevant and appropriate to the research question.

Students need to demonstrate a sound understanding of economic theory through appropriate and accurate application of relevant models. As much as possible, the application of the models should be based on specific real-world information acquired about the topic.

Knowledge and understanding may be effectively shown through appropriate use of economic terminology. Definitions should not be included as footnotes.

Knowledge and understanding may also be effectively shown through accurately drawn and labelled diagrams along with appropriate explanations. Students should not use generic diagrams from secondary sources. They must place the diagrams into the context of the essay by using relevant labels and numbers.

To illustrate that there is knowledge and understanding **in context**, background theory and terminology should be integrated at all times with the relevant research, and not presented as a separate section. Diagrams should only be included if they are supported by the evidence that makes them relevant.

Criterion C: Critical thinking

(Strands: Research, Analysis and Discussion and evaluation)

"Research" refers to both research into relevant economic theory and information collected about the topic. The research used must be consistently relevant to the research question. The inclusion of material that is not clearly relevant to the research question will detract from the analysis and limit the ability of the student to score well against this criterion.

The student is expected to construct the discussion by weaving together economic theory and real-world evidence to present a well-supported answer to the research question. The points contained in the analysis must at all times be supported by specific, relevant material chosen from the student's research. A clear and logical argument may be made by regular reference to the research question. Essays that are largely descriptive in nature do not show evidence of analytical skills and will not do well against this criterion.

All data in the form of diagrams, charts, tables, images and graphs must be analysed within the essay, as close as possible to the data itself. No data should be included if it is not being used to answer the research question, and no analysis should be left up to the reader.

When formulating their argument, students must demonstrate an awareness and understanding of the limitations of their own research and the limitations of the economic theory they have used. They should critically assess the extent to which economic theory may or may not explain the realities present in their case study. Such evaluation should not be contained in a separate section of the essay or solely in the conclusion but should be integrated into the text where it can effectively support the analysis.

Conclusions must be stated and be consistent with the evidence and analysis presented in the essay. Students may draw conclusions throughout the essay in response to the arguments presented. There must be a summative conclusion of the student's response to the research question. Questions that have arisen as a result of the research may be included at the end as evidence of critical awareness.

Five-year rule

Failure to follow the five-year rule will limit the grade in this criterion to a maximum of 6.

Criterion D: Presentation

(Strands: Structure, Layout)

This criterion relates to the extent to which the essay conforms to accepted academic standards in relation to how research papers should be presented. It also relates to how well these elements support the reading, understanding and evaluation of the essay.

Students may provide a section and sub-section structure to their essays, with appropriate informative headings. sub-headings should not distract from the overall structure of the essay or argument presented.

Any graphs, charts, images or tables from literature sources included in essays must be carefully selected and labelled. They should only be used if they are directly relevant to the research question, contribute towards the understanding of the argument and are of a good graphic quality.

Large tables of raw data collected by the student are best included in an appendix, where they should be carefully labelled. Too many graphs, charts and tables distract from the overall quality of the communication.

Only 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.

Any tables should enhance a written explanation and should not themselves include significant bodies of text; if this is the case then these words must be included in the word count. Students must take care in their use of appendices as examiners are not required to read them. All information with direct relevance to the analysis, discussion and evaluation of the essay must be contained in the main body of the essay.

Any material that is not original must be carefully acknowledged, with specific attention paid to the acknowledgment and referencing of quotes and ideas. This acknowledgment and referencing is applicable to audio-visual material, text, graphs and data published in print and electronic sources. If the referencing does not meet the minimum standard as indicated in the guide (name of author, date of publication, title of source and page numbers as applicable), and is not consistently applied, work will be considered as a case of possible academic misconduct.

A bibliography is essential and has to be presented in a standard format. Title page, table of contents, page numbers, etc must contribute to the quality of presentation.

The essay must not exceed 4,000 words of narrative. Graphs, figures, calculations, diagrams, formulas and equations are not included in the word count. Students should be aware that examiners will not read beyond the 4,000-word limit, nor assess any material presented thereafter.

Criterion E: Engagement

(Strands: Process, Research focus)

This criterion is applied by the examiner at the end of the assessment of the essay, after considering the student's *Reflections on planning and progress Form* (RPPF). It assesses the overall impression the examiner has with regard to the student's engagement with the research process and their subject area.

Students are expected to provide reflections on the decision-making and planning process undertaken in completing the essay. Students must demonstrate how they arrived at a topic as well as the methods and approach used. This criterion assesses the extent to which a student has evidenced the rationale for decisions made throughout the planning process and the skills and understandings developed.

For example, students may reflect on:

- the approach and strategies chosen, and their relative success
- the *Approaches to learning* skills they have acquired and how they have developed as a learner
- how their conceptual understandings have developed or changed as a result of their research
- setbacks faced in their research and how they overcame these
- questions that emerged as a result of their research
- what they would do differently if they were to undertake the research again.

Effective reflection highlights the journey the student has engaged in through the EE process. In order to demonstrate that engagement, students must show evidence of critical and reflective thinking that goes beyond simply describing the procedures that have been followed. Reflections must provide the examiner with an insight into **student** thinking, creativity and originality within the research process. The **student** voice must be clearly present and demonstrate the learning that has taken place.

Geography: Subject-specific guidance

See also: *Extended essay guide* and *Extended essay teacher support material*

Overview

An EE in geography gives the student an opportunity to apply a range of geographic skills to complete an independent and in-depth research investigation using geographic concepts, methodologies, theories and sources with a clear spatial emphasis.

Choice of topic

The essay topic may relate to an area of the Diploma Programme geography course, but this is not a requirement. Students can also explore other areas of the wider subject, such as how global issues can be examined through the lens of geography.

Examples of research topics

These examples are for guidance only. Students must ensure their choice of topic is focused (left-hand column) rather than broad (right-hand column).

Focused topics	Broad topics
The extent that soil characteristics affect land use on a farm in ABC, XYZ	Soil characteristics have an effect on farming
Challenges in ensuring a sustainable tourism industry on the island of ABC, XYZ	Managing tourism is a priority in sensitive environments
Factors that account for the changing pattern of refugee migration into country X	Different patterns of refugee migration
Positive impacts in XYZ as a result of the redevelopment of ABC shopping centre	Retail area redevelopment and its effect

Treatment of the topic

It is the task of the supervisor to ensure that the research question:

- is relevant to the subject
- allows the student to make use of appropriate geographic sources
- encourages the application of relevant subject concepts, theories or ideas.

Students should establish the geographic and theoretical context for their research question early in the essay. Students should outline clearly the geographic context in which they are conducting their research using:

- one or more annotated maps
- where relevant, photographs and/or satellite images.

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Research methods

Methodology

Students are not required to undertake primary research, but it is rare for an essay that is based entirely on the reading of published texts to score highly.

Many successful research topics are based on published data such as census or weather records.

Investigations carried out at a local scale also usually achieve highly:

- they demonstrate connections between the subject and local manifestations and instances
- their narrow focus discourages an over-reliance on published materials and encourages original research
- students become more involved when investigating in a familiar, accessible location.

Students should focus on individual research and avoid approaches involving group fieldwork data collection. They must not view the EE as simply an extended piece of fieldwork.

Information on the methodology of the investigation is essential. If students collect their own data, it must be of high quality. It is vital that the investigation is tailored closely to the research question and shows evidence of careful planning.

Students will be assessed for their skills of analysis rather than techniques of data collection and processing. For the EE, the emphasis should be on:

- written analysis
- interpretation
- discussion
- critical evaluation
- the development of a coherent, reasoned argument.

Resources

Appropriate resources for an EE in geography could include:

- primary and secondary data
- quantitative and qualitative information
- books, newspapers and magazines
- interviews and/or questionnaires
- the internet
- maps
- aerial photographs and satellite images
- digital landscape simulations
- videos
- GIS
- diagrams and models.

Students should analyse their data using appropriate quantitative, statistical, graphical or qualitative techniques and the findings should be critically evaluated.

Examples of topics, research questions and suggested approaches

Once students have identified their topic and written their research question, they can decide how to research their answer. They may find it helpful to write a statement outlining their broad approach. These examples are for guidance only.

Topic	**Factors that account for differing fertility rates in two states in India**
Research question	How can differences in the total fertility rates of Uttar Pradesh and Kerala be accounted for?
Approach	The essay contrasts two states of India, one in the north (Uttar Pradesh) and one in the south (Kerala) in terms of their different total fertility rates (TFR). Historic changes in the TFR for each state were examined. Differences in the percentage of rural and urban population, sex ratios, infant mortality rates, female literacy, religion, income levels and local customs were examined in order to explain contrasting levels of the TFR and differences in its rate of change in each state.

Topic	**The sustainability of Singapore's transport system: the Circle Line**
Research question	How far can it be argued that Singapore's Circle Line is a sustainable transport system?
Approach	Using published models of sutainability, a transport sustainability model was devised similar to the Egan Wheel. Eight measures of transport sustainability (accessibility, efficiency, infrastructure quality, comfort and security, affordability, policy response, environmental and health impacts) were applied to eleven selected stations on the Circle Line. Information was collected via passenger questionnaires, an environmental quality survey, qualitative observation and a topological analysis of the transport system to evaluate the sustainability of the system.

Topic	**Globalization in the Suseong district of South Korea**
Research question	Can Suseong be considered to be a socially globalized community?
Approach	The approach uses the KOF Index definition of social globalization. A questionnaire was used to gather information regarding levels of social globalization in each of the 13 sub-districts of Suseong, including dress, music, food, language, technology, access to foreign TV stations, newspapers and services. A land use survey was carried out to examine the range of

	foreign restaurants, fast food, shops and services. Levels of personal contact, information flows and cultural proximity (KOF indicators), were then evaluated for the sample population in the study area.

Illustrations and maps

It is essential that a geography EE be supported by appropriate illustrative graphical material, such as diagrams, maps, tables, images and graphs. Students must acknowledge the sources for each.

Maps

- Good essays usually have maps in the introduction to place the investigation in a clear spatial context.
- All maps should give an indication of orientation and scale, and include a legend or key.
- Students should clearly reference all maps used and give the source of any base maps they have not constructed themselves.
- The use of scanned maps or satellite images, or those that are downloaded in unaltered form, is rarely effective and provides little evidence of students' map skills. However, students are encouraged to modify or adapt such images.
- Students are encouraged to include:
    - sketch maps
    - labelled or annotated diagrams
    - maps they have constructed.
- If students draw maps using computer software, they should state the proprietary program used. Hand-drawn maps should be neat and clear, and employ standard map conventions.

Images or photographs

- Images or photographs should only be used if they are essential illustrative components of the essay, ie not just decoration.
- Students should explain the feature(s) an image or photograph is intended to illustrate. Each should be:
    - oriented
    - sourced
    - labelled, annotated or captioned.
- Colour is frequently used in geographic illustrative materials, so it is important that an original colour version of the essay is submitted.

An important note on "double-dipping"

Students must ensure that their EE does not duplicate any other work they are submitting for the Diploma Programme.

The geography EE and IA

In particular, an EE in geography is not an extension of the internal assessment (IA) task. Students must ensure that they understand the differences between the two.

Supervisors play an important role in guiding students on these distinctions. Students risk their diploma if academic misconduct is detected.

Interpreting the EE assessment criteria

Criterion A: Focus and method

(Strands: Topic, Research question, Methodology)

The topic of the geography extended essay must be clearly indicated at the beginning. This should include the area of the research, the purpose, and the focus of the essay in order to clearly establish the context of the research question. It is usually appropriate to include the general locational background as well as appropriate geographic theory or concept required to understand how the research question has been established. Above all there should be a clear spatial component. For example, a topic statement of an essay may be "The distribution of textile retail shops in South Mumbai". The explanation of this topic might revolve around location on major thoroughfares and access to a market.

The research question must be stated in the form of an actual question. An example of research question could be "To what extent does location have an impact of educational attainment of indigenous people in Queensland?" The research question should be identified clearly and set out prominently at the start of the essay and on the title page.

The student needs to demonstrate within the essay that their research methodology has been well planned. It is expected that students show that they have researched the topic and selected an appropriate geographic approach to address the research question. This applies both to literature research and to practical data collection. Primary or secondary data collection is acceptable. The very best essays are likely to have a mixture of both. Students must ensure and demonstrate that their chosen methods and materials are appropriate for addressing the research question. Investigative methods should be clearly explained. The investigation should be sufficiently clear for, so that others could repeat the work. The reliability of the research should be discussed.

If students are investigating a well-documented or standard topic, they should attempt to look for a new approach or perspective to the issue. This is most likely undertaken by choosing a particular location within the student's own experience, for example their home location. For example, a topic covering climate change may look at changes in snow cover in a ski resort. This would also help in reducing the scope to a manageable local scale.

Criterion B: Knowledge and understanding

(Strands: Context, Subject-specific terminology and concepts)

The source materials accessed should be clearly relevant and appropriate to the research question. They should be effectively referenced and incorporated into the main body of the essay in a way that demonstrates the student's understanding. Literature cited should predominantly come from acknowledged sources. Students must demonstrate the ability to apply their selected sources and methods effectively in support of their argument.

Students writing in geography need to show a mastery of, and fluency in, the use of appropriate terminology. Any technical terms or concepts that are used should be clearly explained and the student must demonstrate an understanding by using them appropriately within the text. The student must try to maintain a consistent linguistic style throughout the essay.

Criterion C: Critical thinking

(Strands: Research, Analysis and Discussion and evaluation)

"Research" refers to both literature sources and data collected by the students themselves.

It must be consistently relevant to the research question.

If the research involves sampling then the selection and size of the sample must allow for valid analysis.

Students should present and analyse the data and sources appropriately. The data must be analysed and presented in such a way that the argument leading to the conclusion is supported and clarified.

This analysis may include:

- maps of various scales and types
- statistical analysis
- tables of processed data
- graphs.

If they analyse the data statistically, students must clearly show understanding of why that particular test was chosen and what the results mean.

If students use maps, graphs or infographics, they must be correctly selected and drawn to illustrate key elements of the analysis. They should only be included if they aid communication.

Students should aim 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.

Students can achieve a clear and logical argument by making repeated reference to the research question and to any hypotheses derived from it. Students' assessment of the extent to which a hypothesis is supported or the question is answered by the data should form part of the argument.

The stated conclusion(s) must be based on and consistent with the research presented in the essay.

Geographic research often reveals unexpected outcomes and students should point these out. 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.

Students must comment on the reliability, quantity, balance and quality of their research, including their own data collection and published material. They should show an awareness of any limitations or uncertainties inherent in their approach. In particular, they should critically comment on the validity and reliability of their data relative to their management of variables within the investigation.

Criterion D: Presentation

(Strands: Structure, Layout)

This criterion relates to the extent to which the essay conforms to accepted academic standards in relation to how research papers should be presented. It also relates to how well these elements support the reading, understanding and evaluation of the essay.

Students must provide a section and sub-section structure to their essays, with appropriate informative headings. Graphics should be set out and analysed at relevant points within the essay and not set out at the end.

Geography is a graphical subject and maps, graphs, infographics, images and tables from literature sources can be included in the essay. They must be carefully selected, labelled and referenced. They should only be used if they are directly relevant to the research question, contribute towards the understanding of the argument and are of a good graphic quality.

Students' own graphical material should also be carefully selected. If scanned in, they should be of good quality and legible.

Large tables of raw data collected by the student are best included in an appendix, where they should be carefully labelled. Tables of processed data should be designed to clearly display the information in the most appropriate form. Graphical representation of data, especially spatial, is to be encouraged.

The importance of good mapping techniques cannot be overemphasized. Maps, graphs or infographics drawn from the analysed data should be selected to highlight only the most pertinent aspects related to the argument. Too many graphs, charts and tables may distract from the overall impression. If tables contain a lot of text, these words will be included in the word count.

Any material that is not original must be carefully acknowledged, with specific attention paid to the acknowledgment and referencing of quotes and ideas. This acknowledgment and referencing is applicable to audio-visual material, text, graphs and data published in print and electronic sources. If the referencing does not meet the minimum standard as indicated in the guide (name of author, date of publication, title of source and page numbers as applicable), and is not consistently applied, work will be considered as a case of possible academic misconduct.

A bibliography is essential and has to be presented in a standard format. Title page, table of contents, page numbers, etc must contribute to the quality of presentation.

The essay must not exceed 4,000 words of narrative. Maps, graphs, figures, infographics, calculations, diagrams, formulas and equations are not included in the word count. Students should be aware that examiners will not read beyond the 4,000-word limit, or assess any material presented thereafter.

Criterion E: Engagement

(Strands: Process, Research focus)

This criterion assesses the student's engagement with their research focus and the research process. It will be applied by the examiner at the end of the assessment of the essay, after considering the student's *Reflections on planning and progress Form* (RPPF).

Students are expected to provide reflections on the decision-making and planning process undertaken in completing the essay. Students must demonstrate how they arrived at a topic as well as the methods and approach used. This criterion assesses the extent to which a student has evidenced the rationale for decisions made throughout the planning process and the skills and understandings developed.

For example, students may reflect on:

- the approach and strategies they chose, and their relative success
- the *Approaches to learning* skills they have developed and their effect on the student as a learner
- how their conceptual understandings have developed or changed as a result of their research
- setbacks they faced in their research and how they overcame these
- questions that emerged as a result of their research
- what they would do differently if they were to undertake the research again.

Effective reflection highlights the journey the student has engaged in through the EE process. Students must show evidence of critical and reflective thinking that goes beyond simply describing the procedures that have been followed.

The reflections must provide the examiner with an insight into **student** thinking, creativity and originality within the research process. The **student** voice must be clearly present and demonstrate the learning that has taken place.

Global politics: Subject-specific guidance

See also: *Extended essay guide* and *Extended essay teacher support material*

Overview

An extended essay (EE) in global politics gives students an opportunity to undertake an in-depth analysis of a significant, contemporary global political issue.

Students should choose a topic that will allow them to demonstrate their:

- knowledge
- research skills
- critical thinking skills.

The outcome should be a substantial, coherent and structured essay that utilizes relevant key concepts, theoretical foundations and approaches to global politics to effectively answer a specific research question.

Global politics is an interdisciplinary subject, reflecting the complex nature of many contemporary political issues. Nonetheless, it has its own theoretical and conceptual frames, terminology, methods and literature. It is essential for students undertaking an EE in global politics to have knowledge and understanding of these. Global politics is **not** a residual category for essays that do not fit into any other subject.

Choice of topic

In the Diploma Programme global politics course, a political issue is defined as:

> Any question that deals with how power is distributed and how it operates within social organization, and how people think about, and engage in, their communities and the wider world on matters that affect their lives.

Hence, there is a wide range of questions that are in principle suitable for an EE in global politics. Students must narrow their initial topic ideas to a concise question that can be researched effectively within the EE's 4,000-word scope.

EEs in global politics may focus on topics that invite a local to global level of analysis, or on any level in between. Sometimes, it may be interesting to investigate how the same political issue unfolds at different levels of analysis.

The benefit of undertaking research that investigates issues at a global level is the availability of secondary data. Research at a local level may be more effectively investigated using primary methods.

In addition to levels of analysis, different theoretical foundations or the perspectives of varying groups of people or individuals on a political issue may help students to formulate a clear and focused research question.

“Contemporary” rule

The topic students choose must be contemporary. Contemporary here is taken to refer to events during the student’s lifetime.

References to historical events and issues can be included if they:

- provide useful background context
- are necessary for understanding a topic
- have clear implications for the present.

However, the emphasis of the essay should be on current affairs. Similarly, students should not base their essay on future events, as in this case it will become speculative and unsupported.

When choosing a topic, students and supervisors must ensure that the various assessment criteria can be satisfied within the 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.

Examples of topics

These examples are for guidance only. Students must ensure their choice of topic is focused (left-hand column) rather than broad (right-hand column).

Focused topics	Broad topics
A comparison of how the Hong Kong protests of late 2014 were portrayed in the official media in Singapore versus the reporting undertaken by NGOs X, Y and Z active in Singapore	The influence of 2014 Hong Kong protests on Singapore
The influence of the election success of Syriza in Greece on the campaign and outcomes of the 2015 parliamentary election in Spain	How populist political parties have changed the political landscape in Europe
An evaluation of the ability of Mexican migrants to achieve a political voice in county X in Arizona	How Mexican migration has changed the politics of the US

Treatment of the topic

EEs in global politics will often be interdisciplinary in terms of subject matter and research approach and may use both primary and secondary sources.

Essays that rely on secondary sources only are perfectly valid, but students must engage critically with the sources of information that they use.

The topic and chosen level(s) of analysis will suggest the appropriate theoretical perspectives and methodological approaches.

Various approaches to the research are possible, such as:

- case studies

- comparative studies
- analyses of discourse.

Relevant techniques for gathering and interpreting evidence include:

- interviews
- literature or media reviews
- quantitative data analysis.

Students may use journalistic or visual material, interviews or data from popular and social media, but their essay should not be based solely on such sources.

Theoretical underpinning

Students must show that they have grounding in theories and methods of global politics and are able to use these appropriately and effectively in order to develop a reasoned argument.

The essay is a formal research essay that examines contemporary political issues, and may do so from an angle previously unfamiliar to the student. For example:

- Students interested in a more theoretical approach to political issues can examine the key concepts of global politics in a way that is more anchored in academic debates.
- Students interested in statistics that underpin decision-making and perceptions in global politics can undertake more comprehensive data analysis.

Examples of topics, research questions and suggested approaches

Once students have identified their topic and written their research question, they can decide how to research their answer. They may find it helpful to write a statement outlining their broad approach. These examples are for guidance only.

Topic	**Influence of "big data" on election campaign tactics: the case of the Obama 2012 campaign**
Research question	To what extent should we be worried about the use of "big data" in election campaigns? The case of the Obama 2012 campaign.
Approach	• Literature review of the ways in which "big data" on voter opinions and behaviours delivers different information to political campaigners than traditional pre-election voter surveys. • Analysis of the differences in how the Obama 2008 and 2012 campaigns approached voters and which of these could be attributable to understanding more about individual voters in

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	the 2012 campaign, including an interview with a key campaign manager. • Evaluation of the ethical implications of the use of "big data" tactics in light of different political conceptions of democracy and different political ideologies about individual freedom.

Topic	**A comparative study of migration from rural areas into cities in Australia and Indonesia**
Research question	To what extent are the ideological and practical forces that drive urbanization global instead of nation-specific? A comparison of the political rhetoric, government policies and impact of global forces in driving migration from rural areas into cities in Australia and Indonesia.
Approach	• Quantitative and qualitative analysis of the extent and local and global reasons behind rural-to-urban migration in Australia and Indonesia. • Analysis of the political rhetoric used in the two countries to argue for the necessity (or otherwise) and benefits (or drawbacks) of this form of migration. • Analysis of the government policies applied in the two countries that have as their intention to encourage this form of migration.

Topic	**Evolution in the Russia–China relationship during and after the 2014–15 Ukraine crisis**
Research question	To what extent is the evolution in the Russia–China relationship during and after the 2014–15 Ukraine crisis evidence that a realist view on international politics still has applicability?
Approach	• Literature review on the ways in which variants of the theory of realism have been used to explain big powers' strategies and moves in post-Cold War international politics. • Brief historical review of the Russia–China relationship in the post-Cold War era. • Analysis of Russian, Chinese and Western media reporting on the evolution in the Russia–China

	relationship during and after the 2014–15 Ukraine crisis. • Evaluation of these developments against realist theories of international politics.

An important note on "double-dipping"

Students must ensure that their EE does not overlap significantly with any other work they are submitting for the Diploma Programme. For example, the engagement activity and higher level extension tasks might give students ideas and inspiration for their EE but they must not examine the same political issue.

The global politics EE and IA

In particular, an EE in global politics is not an extension of the internal assessment tasks—the engagement activity (SL and HL students) and the HL extension (HL students only)—for the subject. Students must ensure that they understand the differences between the two.

- The engagement activity task is based primarily on experiential learning, whereas the EE in global politics is a formal research essay relying primarily on secondary sources.
- Although the HL extension task and the EE in global politics are both based primarily on secondary sources, the HL extension task is directed towards an oral end product, whereas the EE in global politics culminates in a comprehensive written task.

Supervisors play an important role here in guiding students on these distinctions. Students risk their diploma if academic misconduct is found.

Interpreting the EE assessment criteria

Criterion A: Focus and method

(Strands: Topic, Research question, Methodology)

Students must choose a topic that deals with a contemporary global political issue. They must explain the significance of the issue and why it is worthy of investigation. Often this has to do with how the issue affects people's lives within a social organization either locally, globally or at other levels of analysis.

The topic chosen must be expressed in the form of a research question. The research question must be specific and sharply focused and capable of being discussed effectively within the word limit. As global politics is an interdisciplinary subject and as what counts as a "political issue" is broadly interpreted, it is particularly important that students choose a topic and formulate a research question that allows them to base their essay on the specific theoretical and conceptual frames, terminology, methods and literature of global politics.

Students must demonstrate that they have made considered methodological choices in their research and selected a suitable range of appropriate and relevant sources. Case studies, comparative studies and analyses of discourse are all legitimate approaches to research, whereas interviews, literature or media reviews, or quantitative data analysis are all possible research techniques; choices depend on the research

question and what is available, and need to be justified. It is appropriate to use only secondary sources or a combination of primary and secondary sources; selection depends on the level of analysis at which students approach their political issue. Again, this needs to be justified.

The approaches, techniques and sources must provide sufficient material to develop and support an argument and conclusion relevant to the research question, and they must contain different theoretical or conceptual perspectives for critical engagement to be possible.

Effective planning and a well-focused research question tend to go together. A key indicator of this is that students have chosen a comprehensive range of sources and suitable research methods, which are relevant and appropriate to answering the research question.

Criterion B: Knowledge and understanding

(Strands: Context, Subject-specific terminology and concepts)

The essay must demonstrate an effective understanding of the place of the research question in a broader context of global politics and the theoretical discipline, establishing links between the political issue investigated and political institutions, actors and theories. Additionally, students should demonstrate an awareness of how social and cultural contexts and biases can affect understandings of political issues.

Students must be able to demonstrate both a sound understanding of, and the ability to employ accurately, the terminology and concepts relevant to the research topic. Where it is deemed useful to clarify meaning or context, students may provide further explanation or definition of selected terms or concepts. A solid use of the key concepts of the global politics course is particularly expected.

Additionally, students must demonstrate that the knowledge gained from their selected approaches, techniques and sources can then be analysed and, on the basis of this analysis, an argument can be formed and a conclusion(s) to the research question reached.

Criterion C: Critical thinking

(Strands: Research, Analysis and Discussion and evaluation)

"Research" here refers to a critical engagement with a contemporary political issue through relevant approaches, techniques and sources.

Students must be able to construct, present and support effectively a specific argument or position that provides their response or answer to the research question. This argument will be developed through an analysis of the research material, including consideration of the value and limitations of this material.

The points contained in the analysis must, at all times, be supported by specific, relevant material chosen from the student's research. Throughout the essay, the thoughts and ideas students present must relate to the analysis of the research question. The inclusion of thoughts or ideas that are not relevant will detract from the value of the analysis and limit the student's ability to score well on this criterion.

Students should not present essays that are wholly or largely narrative or descriptive in nature. These do not provide any evidence of analytical skills and will not score well.

In global politics, the development of a reasoned argument based on research may start with a student stating their position in relation to the question posed. This position must then be supported by evidence and developed into a reasoned argument, which culminates in conclusion(s) being given.

Personal views should not simply be stated without being supported by reference to the research material. When constructing an argument in global politics, it is crucial that students seek to achieve a balance by presenting conflicting views in an impartial way before reaching a conclusion.

A conclusion summarizes the student's response to the research question. This conclusion must be consistent with the position and evidence presented in the essay. The conclusion may not include material that has not been discussed in the body of the essay. However, questions that have arisen as a result of the research and may be suitable for further study may be included in the conclusion.

An integral part of the analysis of the evidence and the development of a reasoned argument is that an evaluation of the relative value and limitations of the selected approaches, techniques and sources is made. This evaluation should not be contained in a separate section of the essay but should be integrated into the text where it provides useful insight relative to an approach, technique or source that the student is referring to.

Because global politics issues are often contested and it is common for biased views to be presented, students must pay particular attention to the evaluation of sources. They should avoid unjustified and subjective value judgments, and instead be able to evaluate views using the theoretical and conceptual frames of the subject.

Criterion D: Presentation

(Strands: Structure, Layout)

This criterion relates to the extent to which the essay conforms to accepted academic standards in relation to how research papers should be presented. It also relates to how well these elements support the reading, understanding and evaluation of the essay.

Students may provide a section and sub-section structure to their essays, with informative headings. sub-headings should not distract from the overall structure of the essay or argument presented.

Charts, tables and images may appear in the body of the essay only if they illustrate or clarify the argument at that particular point. The inclusion of non-relevant or superfluous material will not be rewarded and may actually detract from the argument. All charts, images and tables must be properly referenced with respect to their origin or source.

Any tables should enhance a written explanation and not themselves include significant bodies of text. If they do, then these words must be included in the word count.

Students must take care in their use of appendices as examiners are not required to read them. All information with direct relevance to the analysis, discussion and evaluation of the essay must be contained in the main body of the essay.

Any material that is not original must be carefully acknowledged, with specific attention paid to the acknowledgment and referencing of quotes and ideas. This acknowledgment and referencing is applicable to audio-visual material, text, graphs and data published in print and electronic sources. If the referencing does not meet the minimum standard as indicated in the guide (name of author, date of publication, title of source and page numbers as applicable), and is not consistently applied, work will be considered as a case of possible academic misconduct.

A bibliography is essential and has to be presented in a standard format. Title page, table of contents, page numbers, etc must contribute to the quality of presentation.

The essay must not exceed 4,000 words. Charts, tables and images are not included in the word count. Students should be aware that examiners will not read beyond the 4,000-word limit, or assess any material presented thereafter.

Criterion E: Engagement

(Strands: Process, Research focus)

This criterion assesses the student's engagement with their research focus and the research process. It will be applied by the examiner at the end of the assessment of the essay, after considering the student's *Reflections on planning and progress Form* (RPPF).

Students are expected to provide reflections on the decision-making and planning process undertaken in completing the essay. Students must demonstrate how they arrived at a topic as well as the methods and approach used. This criterion assesses the extent to which a student has evidenced the rationale for decisions made throughout the planning process and the skills and understandings developed.

For example, students may reflect on:

- the approach and strategies they chose, and their relative success
- the *Approaches to learning* skills they have developed and their effect on the student as a learner
- how their conceptual understandings have developed or changed as a result of their research
- setbacks they faced in their research and how they overcame these
- questions that emerged as a result of their research
- what they would do differently if they were to undertake the research again.

Effective reflection highlights the journey the student has engaged in through the EE process. Students must show evidence of critical and reflective thinking that goes beyond simply describing the procedures that have been followed.

The reflections must provide the examiner with an insight into **student** thinking, creativity and originality within the research process. The **student** voice must be clearly present and demonstrate the learning that has taken place.

History: Subject-specific guidance

See also: *Extended essay guide* and *Extended essay teacher support material*

Overview

The EE gives students an opportunity to undertake in-depth research in an area of interest to them, of local, regional or global significance.

The outcome of the research should be a coherent and structured essay that effectively addresses a particular issue expressed as a research question.

The question should encourage an investigation that lends itself to analysis and critical commentary. Students should avoid straightforward "What" and "How" questions as they tend to lead to narrative treatment. Terms such as "How significant…?" or "How successful…?" are more likely to engage students in analysis.

"To what extent…?" requires an analytical answer, but if students choose this or a similar term, they need to ensure that their task does also require them to consider other factors to answer the question.

Choice of topic

The topic must:

- focus on the human past (at least 10 years ago)
- be worthy of study
- lend itself to systematic investigation in line with the published assessment criteria.

Ten-year rule

Essays that focus on events of the past 10 years are not acceptable, as these are regarded as current affairs, not history. Any essay that does so will be compromised across all of the criteria.

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). Such an approach is likely to produce an essay that is essentially narrative or descriptive.

The topic chosen must be suitable for effective treatment within the 4,000-word limit. Essays that cover many aspects of history, or a long time period, are unlikely to prove successful.

Narrowing the scope of the essay:

- is a crucial step in helping to ensure that the essay has a clear focus
- allows students to demonstrate detailed and specific historical knowledge, understanding and critical analysis.

Examples of topics

These examples are for guidance only. Students must ensure their choice of topic is focused (left-hand column) rather than broad (right-hand column).

(The essay does not need a title in addition to its research question. It is usually better if they are the same because it helps the student to obtain a clear focus.)

Focused topics	Broad topics
An examination of the economic reasons that led to the overthrow of the Tokugawa Shogunate in Japan	The overthrow of the Tokugawa Shogunate in Japan
An evaluation of the success of denazification carried out in the US zone of Germany 1945–48	Denazification in Germany after the Second World War
An examination of the extent to which the Holodomor in the Ukraine 1932–33 was a failure of Stalin's policy of collectivization	The introduction of collectivization in the Soviet Union
An examination of the extent to which the overthrow of Allende in 1973 was the result of external factors	The coup against Allende 1973

One way to help students narrow down their topic is to encourage them to think about the key concepts in the Diploma Programme history course:

- causation
- consequence
- change
- continuity
- significance
- perspectives.

Causation and consequence are the most common focus of history EEs. Thinking about **all** the key concepts can give students ideas beyond these.

Treatment of the topic

Disciplinary focus

Some topics can also be approached from the perspective of other subjects, such as economics or geography. Social history includes areas such as music and sport.

Students must ensure their treatment of the topic meets the subject requirements of history.

- While social history does include areas such as music and sport, these are only acceptable for a history extended essay if they are tackled from a historical perspective.

Suitable research questions need to lead to:

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- systematic investigation
- critical analysis
- detailed understanding.

Adequate available sources are essential. If it is clear at an early stage in the research that they are not, then students should change focus. If necessary, the supervisor should advise them to do so.

Sources

Students who use both primary and secondary sources for their research will find it easier to achieve the highest marks.

If a student chooses to use secondary sources only they will need to take particular care to address the assessment criteria.

Possible approaches to the research question include:

- 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.

Examples of topics, research questions and approaches

Once students have identified their topic and written their research question, they can decide how to research their answer. They may find it helpful to write a statement outlining their broad approach. These examples have all been chosen by past students and are included here for guidance only.

Topic	**The origins of the Cold War in Europe 1945–48**
Research question	How far was the Christian Democrat victory in the Italian elections of 1948 influenced by Cold War tensions?
Approach	Reading is undertaken to fully understand the context and the importance of this election as the first in post-war republican Italy. More detailed research may be carried out to determine the methods used by the Italian Communist Party and the Christian Democrats to rally their supporters and also any role played by the USSR and the US in influencing the outcome. Both primary and secondary sources would be accessible and should be used. An examination, and evaluation, of different interpretations would be carried out as well as consideration of domestic factors to be weighed against the influence of the Cold War, allowing a conclusion to be reached.

Topic	**The decline of the Ottoman Empire**
Research question	To what extent was poor leadership the reason for the defeat of the Ottoman armies at the gates of Vienna in 1683?
Approach	Reading is undertaken to become familiar with the context of the topic, in particular to understand the nature of the Ottoman Empire and its weaknesses by the end of the 17th century in order to determine how these may have contributed to its defeat. Also to read sources on the decline in leadership after the death of Suleiman the Magnificent, over a century earlier. The growing unity among the Christian powers in Europe and its contribution to their victory in 1683 will also be examined. Both primary and secondary sources as well as a variety of historical interpretations will be accessed to understand the Habsburg Empires at this time and the reasons why the siege was brought to an end. The merits of various interpretations regarding the factors that led to the defeat of the Ottomans as well as the success of the Christian league can be examined and both primary and secondary sources will be used to allow a judgment to be made.

Topic	**The 1968 Democratic Convention in Chicago**
Research question	"I have done my best. I have lost, Mr. Nixon has won." (Hubert Humphrey) To what extent did Hubert Humphrey lose the 1968 presidential election because of the Chicago Convention?
Approach	General reading is undertaken to aid familiarization with the events of 1968, a year marked by riots, protests and political assassinations. Both primary and secondary sources are used as well as different interpretations accessed to discover the reasons for the defeat of Humphrey, the Democratic presidential candidate. These are identified and assessed to allow a judgment to be made on the importance of the Convention as a factor that influenced the outcome of the election.

Topic	**The Truth and Reconciliation Commission in post-apartheid South Africa**
Research question	How far did the Truth and Reconciliation Commission achieve its twin aims of establishing the truth and achieving reconciliation by 2002?
Approach	Both primary and secondary resources that outline the Commission procedures and findings are used for background and note-taking. The criticisms of the Commission are also investigated to see how far they can be justified. The end point of 2002 (the year that the Commission came to an end) is included to provide a focus to the investigation and to narrow its scope sufficiently.

Critical analysis and evaluation

Students should not accept uncritically the value and reliability of sources, especially when the authenticity of some of the sources may be questionable.

Students should show awareness of the value and limitations of their main sources through analysing their origin, purpose and content:

- Who were the authors?
- What was the intended audience?
- What were the overt and covert reasons for the production of the source being evaluated?

They should integrate this evaluation into the main body of the essay and not adopt a "stand alone" approach of two sources.

Students can show good critical analysis and historical judgment through a sound assessment of source material and different explanations and interpretations.

Opportunities for reporting and assessing different interpretations will vary with the topic chosen. Students will gain credit for explaining why a historian formed an interpretation, not merely stating it.

The essay's argument

Students should aim to produce an argument that:

- consistently shows good historical understanding
- sets the research question into context
- addresses the research question fully and effectively
- is well substantiated, based on relevant specific evidence with added analytical comments.

An EE in history is a formal essay that is marked according to the assessment criteria. An essay will not score well if students are unaware of these criteria and make no attempt to address them in the work.

An important note on "double-dipping"

Students must ensure that their EE does not overlap significantly with any other work they are submitting for the Diploma Programme.

The history EE and IA

In particular, the EE is not an extension of the internal assessment (IA) for the subject. Students must ensure that they understand the differences between the two.

	EE	IA
Reflection	• more generic • requires students to reflect on the process of their own research	• TOK-inspired • requires students to reflect on the particular problems and

		challenges faced by historians using the historical method
Purpose	an academic research paper on a historical event	focuses on historical method

Topic: Students may choose to write their EE and the IA on the same time period or on a similar topic.

Sources: These must be sufficiently different to show clearly that the student has accessed a broad range of both primary and secondary material. In other words, the IA and EE must not replicate sources. If some of the same sources are used, other different sources must also be used for each of the tasks.

Supervisors play an important role here in guiding students on these distinctions. Students risk their diploma if academic misconduct is found.

Interpreting the EE assessment criteria

Criterion A: Focus and method

(Strands: Topic, Research question, Methodology)

Students must choose a topic from the human past that is of a meaningful nature. Topics may not discuss events/individuals/movements which have taken place within 10 years of the writing of the essay. For example, an essay submitted for assessment in 2018 must discuss events prior to 2008. Failure to follow this instruction will limit the grade in this criterion to a maximum of 4.

The topic chosen must be expressed in the form of a research question. The research question must be focused and capable of being discussed effectively within the word limit. Students must establish the historical context and significance of the topic and explain why it is worthy of investigation.

Students must demonstrate that they have selected a suitable range of appropriate and relevant sources. An attempt should be made to use both primary and secondary sources where possible. They should demonstrate both factual material as well as the opinions of historians. These sources must provide sufficient material to develop and support an argument and conclusion relevant to the research question.

Effective planning and a well-focused research question tend to go together. A key indicator of this is that students have chosen a comprehensive range of sources that are relevant and appropriate to answering the research question.

Ten-year rule

If the ten-year rule has not been adhered to, a maximum of only 4 marks can be awarded in this criterion.

Criterion B: Knowledge and understanding

(Strands: Context, Subject-specific terminology and concepts)

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The essay must show that the student understands the place of the research question in a broader historical context; for example, the Marshall Plan with respect to the origins of the Cold War. In other words, if the focus of the essay is the Marshall Plan, students must demonstrate how this focus is relevant to an understanding of the origins of the Cold War.

The student must demonstrate that they understand and can use accurately historical terms and concepts relevant to the research topic.

Where it is deemed useful to clarify meaning or context, students may provide further explanation or definition of selected terms or concepts.

Additionally, students must demonstrate that the knowledge gained from their selected sources can then be analysed and, on the basis of this analysis, form an argument and reach a conclusion(s) to the research question.

Ten-year rule

If the ten-year rule has not been adhered to, a maximum of only 4 marks can be awarded in this criterion.

Criterion C: Critical thinking

(Strands: Research, Analysis and Discussion and evaluation)

In a history essay, "research" refers to a critical engagement with the past through relevant sources. Students must be able to construct, present and support effectively a specific argument or position that provides their response to the research question.

This argument must be supported and developed by an analysis or consideration of the value and limitations of the research material.

Throughout the essay students must present ideas or concepts that relate consistently to the analysis of the research question. The inclusion of ideas or concepts that are not relevant will detract from the value of the analysis and limit the student's ability to score well on this criterion.

The points contained in the argument and analysis must, at all times, be supported by specific, relevant material chosen from the student's research.

Students should not present essays that are wholly or largely narrative or descriptive in nature. These do not provide any evidence of analytical skills and will not score well.

In history, the development of a reasoned argument based on the analysis of historical sources may start with a student stating their position in relation to the question posed. This position must then be supported by evidence and developed into a reasoned argument, which culminates in conclusion(s) being given.

A conclusion summarizes the student's response to the research question. This conclusion must be consistent with the position and evidence presented in the essay. The conclusion may not include material that has not been discussed in the body of the essay.

However, questions that have arisen as a result of the research and may be suitable for further study may be included in the conclusion.

An evaluation of the relative value and limitations of the sources is an integral part of the analysis of the evidence and the development of a reasoned argument. This evaluation should be integrated into the text rather than contained in a separate section of the essay. It will then provide useful information or insight relative to the source or historian's opinion that the student is referring to in support of their argument.

Ten-year rule

If the 10-year rule has not been adhered to, a maximum of only 3 marks can be awarded in this criterion.

Criterion D: Presentation

(Strands: Structure, Layout)

This criterion relates to the extent to which the essay conforms to accepted academic standards in relation to how research papers should be presented. It also relates to how well these elements support the reading, understanding and evaluation of the essay.

Students may provide a section and sub-section structure to their essays, with informative headings. sub-headings should not distract from the overall structure of the essay or argument presented.

Use of charts, images and tables

Charts, tables and images may appear in the body of the essay only if they illustrate or clarify the argument at that particular point. The inclusion of non-relevant or superfluous material will not be rewarded and may actually detract from the argument.

Any tables should enhance a written explanation and should not themselves include significant bodies of text. If they do, then these words must be included in the word count. Students must take care in their use of appendices as examiners are not required to read them. All information with direct relevance to the analysis, discussion and evaluation of the essay must be contained in the main body of the essay. All charts, images and tables must be properly referenced with respect to their origin or source.

Any material that is not original must be carefully acknowledged, with specific attention paid to the acknowledgment and referencing of quotes and ideas. This acknowledgment and referencing is applicable to audio-visual material, text, graphs and data published in print and electronic sources. If the referencing does not meet the minimum standard as indicated in the guide (name of author, date of publication, title of source and page numbers as applicable), and is not consistently applied, work will be considered as a case of possible academic misconduct.

A bibliography is essential and has to be presented in a standard format. Title page, table of contents, page numbers, etc must contribute to the quality of presentation.

The essay must not exceed 4,000 words. Charts, tables and images are not included in the word count. Students should be aware that examiners will not read beyond the 4,000-word limit, or assess any material presented thereafter.

Criterion E: Engagement

(Strands: Process, Research focus)

This criterion assesses the student's engagement with their research focus and the research process. It will be applied by the examiner at the end of the assessment of the essay, after considering the student's *Reflections on planning and progress Form* (RPPF).

Students are expected to provide reflections on the decision-making and planning process undertaken in completing the essay. Students must demonstrate how they arrived at a topic as well as the methods and approach used. This criterion assesses the extent to which a student has evidenced the rationale for decisions made throughout the planning process and the skills and understandings developed.

For example, students may reflect on:

- the approach and strategies they chose, and their relative success
- the *Approaches to learning* skills they have developed and their effect on the student as a learner
- how their conceptual understandings have developed or changed as a result of their research
- setbacks they faced in their research and how they overcame these
- questions that emerged as a result of their research
- what they would do differently if they were to undertake the research again.

Effective reflection highlights the journey the student has engaged in through the EE process. Students must show evidence of critical and reflective thinking that goes beyond simply describing the procedures that have been followed.

The reflections must provide the examiner with an insight into **student** thinking, creativity and originality within the research process. The **student** voice must be clearly present and demonstrate the learning that has taken place.

Information technology in a global society: Subject-specific guidance

See also: *Extended essay guide* and *Extended essay teacher support material*

Overview

Information technology in a global society (ITGS) focuses on the systematic and critical study of the relationship between information and communication technologies (IT systems) and individuals and society.

ITGS requires:

- sufficient technical knowledge of IT systems in the context in which they are being considered
- an understanding of their impacts on stakeholders.

The issues are often ethical—for example arising from the development, implementation, use or disposal of IT systems—and require informed decision-making.

An ITGS EE offers students an opportunity to:

- undertake research in a ITGS-related topic of personal interest
- develop research skills
- expand their technical understanding of IT
- study an IT system in a real-world scenario
- analyse its impact on individuals, organizations or society in general.

Choice of topic

IT's rapid development, global reach and emerging social and ethical considerations offer ITGS students huge scope in their choice of topic. Students have the opportunity to be innovative in their research in ways that few other subject areas can match.

The choice of topic may emerge from many sources including:

- a news article
- current use of IT system(s)
- issues discussed in class
- personal interest.

The topic must focus on the impact of an IT system or a specific issue that has ITGS at its core. A topic with only an incidental mention of an IT system or that focuses on another technology is not suitable for an ITGS EE.

Students must demonstrate in-depth knowledge of some aspect of IT and its impacts. Their level of expertise must go well beyond general knowledge. They should be able to use IT terminology and concepts competently. Students' explanation of the particular IT system must be supported with appropriate research, including visual evidence.

Sources of information

Students' essays will include evidence obtained from:

- the internet
- books
- newspapers and magazines
- media broadcasts
- publications from expert sources.

The essay will also include primary evidence collected by the student.

Students' sources should be reliable. The essay will, therefore, include some critical analysis of the evidence.

Research question

In choosing their topic, students are strongly advised to concentrate on developing a research question, carrying out relevant primary research, in which the students collect their own data, and secondary research, and applying ITGS theory, tools and techniques.

It is important that the research question is sufficiently focused to allow adequate treatment within the word limit.

Students should avoid topics that depend entirely on summarizing general secondary data, as they are likely to lead to an essay that is essentially narrative or descriptive in nature.

However, students who make effective use of relevant secondary data and primary data in answering the research question will achieve the highest marks.

Students can collect primary data using a wide range of research methods, including:

- investigations
- experiments
- interviews
- other formal research methods.

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

Examples of topics

These examples are just for guidance. Students must ensure their choice of topic is focused (left-hand column) rather than broad (right-hand column).

Focused topics	Broad topics
An examination of the extent to which government surveillance cameras in Britain invade privacy and prevent crime	Surveillance cameras and the threat to privacy
Exploring the impact of gamification in the teaching and learning of MYP history at XXX School	Improvements in teaching and learning with gamification
An evaluation of the effectiveness of measures taken to protect online customers of the XXX Bank	Prevention of hacking for online bank accounts
An investigation into the impacts of video gaming on the South Korean culture	The impacts of video games
The extent to which IT monitoring devices have provided a safe environment for mineworkers in Antamina, Peru	IT monitoring devices for mineworkers
An investigation into the use of individual digital footprints by employers in the UK	Digital footprints in the UK

It is essential that the ITGS research topic is based on an issue or impact relating to an IT system or IT systems. This means that the IT system(s) must involve some form of data processing.

EEs that only focus on a technology or on a science topic or are speculative in nature are not suitable for ITGS essays. Similarly, an essay that has a social problem as its focus with only tenuous relevance to an IT system is unlikely to have sufficient depth.

Treatment of the topic

Level of understanding of IT

The ITGS EE is not an exercise in demonstrating IT skills, but students must clearly show in-depth understanding of the IT system in the chosen topic. Students who do not have well-developed IT practical skills or who are not taking ITGS as one of their Diploma Programme subjects are unlikely to show the level of insight that is required for the highest levels of attainment.

However, students should only include program code, mark-up codes (eg HTML) or detailed electronics to support their argument. They should not make such technical expertise the focus of their essay.

Examples of topics, research questions and suggested approaches

Once students have identified their topic and written their research question, they can decide how to research their answer. They may find it helpful to write a statement outlining their broad approach. These examples are for guidance only.

Topic	**Impacts of specific IT systems in a school environment**
Research question	How have IT systems been used to improve the performance of the XXX School cycling team?
Approach	Secondary research and primary research includes: • Research into the specific IT systems that are used by the XXX School cycling team to improve performance during training and competitions, including diagrams, images, terminology and explanations that go beyond common knowledge. • Evidence collected from manufacturers, professional persons and teams involved in cycling and situations similar to the XXX School cycling team about how these specific IT systems have been used to improve performance in cycling. • Analysis of the extent to which the IT systems have improved performance on the XXX School cycling team based on the data collected from interviews with the cycling team coaches and quantitative data collected from the cycling team. Specific performance tests for the purpose of the EE conducted with cycling team members.

Topic	**Impacts of using the *da Vinci Surgical System* in a hospital**
Research question	To what extent is the *da Vinci* Surgical System reliable and effective in the XXX Hospital?
Approach	Secondary research and primary research includes: • Presentation of the *da Vinci* Surgical System including annotated images and photographs, terminology and description and explanation of how the system has been implemented and is used during medical operations at XXX Hospital. • Evidence from professional medical journals, manufacturers, online video demonstrations and articles written by doctors who use the *da Vinci* Surgical System.

	• The researcher has permission to photograph the specific *da Vinci* Surgical System used in XXX Hospital and observe an actual demonstration of how the IT system is used. • Interviews conducted with the XXX Hospital doctors and professional staff who use the system. • Questionnaires are emailed to doctors who use the *da Vinci* Surgical System in the region in order for comparisons to be made with the information collected from doctors in XXX Hospital and the evidence collected from professional sources.

Topic	**Impacts of Google Street View on individuals**
Research question	To what extent does Google Street View invade the privacy and anonymity of individuals?
Approach	Secondary research and primary research: • Explanation of the IT systems that Google Street View uses for capturing street view images in both cities and rural areas worldwide. The edited images are made accessible through Google Maps and Google Earth. The background of the research question is supported by pictures of the Google equipment taking street view images, maps of locations, examples of images taken and details of the specific IT systems used. • Evidence collected from reliable sources to show how Google has to some extent invaded some individual's privacy and anonymity with an explanation of how and where this has occurred and the issues involved. • Google policy statements considered with respect to the methods Google uses, the images that are made publicly available and the legal cases that have emerged. • Evidence of actions taken by Google, governments and individuals to protect privacy

	and anonymity and their effectiveness are supported by research.

An important note on "double-dipping"

Students must ensure that their EE does not duplicate other work they are submitting for the Diploma Programme. The essay may not in any way be related to assessed material in any of their other IB subjects or TOK or to CAS activities.

The ITGS EE and IA

An EE in ITGS is not an extension of the internal assessment (IA) task. Students must ensure that they understand the differences between the two.

- The ITGS project is focused on developing an actual IT product for a client to address the client's specific need or problem. However, the ITGS EE is based upon the research of an impact or issue relating to IT system(s) that has ITGS at its core.
- In an ITGS EE hands-on investigations may be used to explain the IT system(s), how the impacts or issue evolved or possible solutions for the issue. IT tools are not used in the EE to develop a product.
- The ITGS project involves investigating what IT products have been implemented in similar scenarios and how specific IT tools can be used to develop the product. However, research for the ITGS EE involves research and investigation relating to the specific IT system, the related impacts or issues.

Supervisors play an important role here in guiding students on these distinctions. Students risk their diploma if academic misconduct is found.

Interpreting the EE assessment criteria

Criterion A: Focus and method

(Strands: Topic, Research question, Methodology)

The ITGS topic and research question should focus on how an IT system affects particular stakeholders in a specific situation. The question will contain aspects of the "ITGS triangle":

- particular scenario
- IT system
- specific social and ethical considerations.

A research question that is focused on only an IT system or a new computer-based technology is unlikely to be successful. It also needs to be noted that not all "technologies" are computer-based technologies and may not be relevant to the ITGS EE.

The research question must be concisely stated as a question and must be able to be effectively addressed within the 4,000-word limit. The research question must be placed in an academic context stating the significance of the topic and why it is worthy of investigation.

Research questions that are focused on a particular situation and context (eg school, organization or business) must be thoroughly researched using both secondary and primary resources. For example, school-based topics limit the scope of the investigation to the particular school setting.

Students must first consult sufficient secondary research. This should include a range of relevant sources, including the internet, books, newspapers and magazines.

Students can use primary research methods and investigations to further develop the research question with a view to explaining the related IT systems and for comparisons with findings from secondary research.

Primary research may include:

- first-hand investigations
- interviews
- surveys
- other data collection methods.

Students must clearly explain within the body of the essay the methodologies they use for primary research.

Students must also be aware of the correct processes to use for collecting, analysing, presenting and citing the type of data they have collected. They must make appropriate evidence from their primary research available in the appendices using accepted techniques.

The secondary research and primary research must provide sufficient evidence for students to develop an argument and support their conclusion to the research question.

The success of the ITGS EE is dependent upon:

- a concisely stated research question based on the ITGS triangle
- thorough research using a comprehensive range of sources
- detailed planning leading to a conclusion.

Criterion B: Knowledge and understanding

(Strands: Context, Subject-specific terminology and concepts)

Students must effectively demonstrate their understanding of the concepts related to the research question. This requires a clear explanation of the specific IT system using the appropriate terminology, concepts, diagrams, images and screenshots.

Visual material along with the related text is an effective method for showing how the IT system has contributed to the specific topic in the research question. Wherever they use visual material, students must ensure that they:

- label it clearly
- cite its source

- refer to it in the accompanying text.

Students should show their knowledge and understanding through a logical, well-presented argument based on sound research and investigation leading to an appropriate conclusion(s) for the research question.

The level of knowledge and ITGS terminology should address an IT-aware audience, providing sufficient explanation and examples to support the topic. ITGS terminology refers both to IT terminology and to vocabulary referring to social and ethical considerations.

The level of knowledge and understanding should reflect the specialized knowledge that has been acquired through comprehensive research into the research question.

Criterion C: Critical thinking

(Strands: Research, Analysis and Discussion and evaluation)

The essay should follow a logical development, progressing from the research question through a well-constructed argument to formulating a conclusion that answers the research question.

The argument must be closely related to the research question and to the evidence provided by the secondary and primary research.

Accurate analysis can only be based on quality research. The resources used must be relevant and reliable. Secondary research needs to be conducted before primary research so that the two can be related to one another. The sources used for secondary research must be appropriately cited and documented.

Valid data collection techniques must be used for primary research. These methods must be explained in the body of the essay along with any limitations, assumptions and biases that may be involved.

Students need to use the accepted methodologies for collecting, analysing and presenting data from primary research.

- Where interviews are used to collect data, transcripts from interviews must be accurately documented and made available in the appendix.
- Surveys must be included in the appendix along with a summary of the raw data question by question.
- Well-labelled graphs, charts or tables relevant to the argument should be included within the body of the EE to present data for analysis.

Analysis can occur in several ways, including:

- analysis of findings from secondary sources or experts
- analysis of the results of primary research or investigation (eg outcomes of surveys, results from two different interviews)
- comparison of the results of primary research or investigation with the claims found in secondary research.

Students must use sound deductive reasoning throughout their argument. Specific situations may be presented that demonstrate a particular point. However, it is erroneous reasoning, called "fallacy by induction", to claim that a situation that occurs in one, two or a limited number of instances is true in general.

Students should base their conclusion on the sources and argument that they have presented. The conclusion must not introduce any new evidence. However, it should not merely repeat what has been stated before. It should be a synthesis of the arguments that have been presented and answer the research question. Questions that have emerged as a part of the research and are suitable for further study may be included in the conclusion.

Criterion D: Presentation

(Strands: Structure, Layout)

This criterion assesses the extent to which the presentation follows the standard format expected for academic writing and the extent to which this aids effective communication.

Students may provide a section and sub-section structure to their essays, with informative headings, if appropriate. sub-headings should not distract from the overall structure of the essay or argument presented.

Students may include in the body of the essay any charts, images or tables that are relevant to the development of their argument. They should appear as close as possible to their first mention. Students should only use them if they are directly relevant to the research question and are of a good graphic quality.

To ensure legibility of screenshots, images and other visual material, original versions of the essay must be submitted, not photocopies where the colour and quality of visual material has been compromised.

Students must accompany images, charts and tables with analysis and discussion to show how they further the essay's argument.

When graphs and charts are based on the results from a particular question in a survey, the citation should refer to the specific summary of raw data for that question by number.

All charts, images and tables must be properly referenced with respect to their origin or source. Too many graphs, charts and tables detract from the overall quality of the communication.

Tables of processed data should be designed to display clearly the information they contain. They should enhance a written explanation and should not themselves include significant bodies of text. If they do, then these words will be included in the word count.

Students must take care in their use of appendices as examiners are not required to read them. All information with direct relevance to the analysis, discussion and evaluation of the essay must be contained in the main body of the essay.

Any material that is not original must be carefully acknowledged, with specific attention paid to the acknowledgment and referencing of quotes and ideas. This acknowledgment and referencing is applicable to audio-visual material, text, graphs and data published in print and electronic sources. If the referencing does not meet the minimum standard as indicated in the guide (name of author, date of publication, title of source and page numbers as applicable), and is not consistently applied, work will be considered as a case of possible academic misconduct.

A bibliography is essential and has to be presented in a standard format. Title page, table of contents, page numbers, etc must contribute to the quality of presentation.

The essay must not exceed 4,000 words of narrative. Graphs, figures, calculations, diagrams, formulas, equations and information contained in visual material are not included in the word count. Examiners will not read beyond the 4,000-word limit, nor assess any material presented thereafter.

Criterion E: Engagement

(Strands: Process, Research focus)

This criterion assesses the student's engagement with their research focus and the research process. It will be applied by the examiner at the end of the assessment of the essay, after considering the student's *Reflections on planning and progress Form* (RPPF).

Students are expected to provide reflections on the decision-making and planning process undertaken in completing the essay. Students must demonstrate how they arrived at a topic as well as the methods and approach used. This criterion assesses the extent to which a student has evidenced the rationale for decisions made throughout the planning process and the skills and understandings developed.

For example, students may reflect on:

- the approach and strategies they chose, and their relative success
- the *Approaches to learning* skills they have developed and their effect on the student as a learner
- how their conceptual understandings have developed or changed as a result of their research
- setbacks they faced in their research and how they overcame these
- questions that emerged as a result of their research
- what they would do differently if they were to undertake the research again.

Effective reflection highlights the journey the student has engaged in through the EE process. Students must show evidence of critical and reflective thinking that goes beyond simply describing the procedures that have been followed.

The reflections must provide the examiner with an insight into **student** thinking, creativity and originality within the research process. The **student** voice must be clearly present and demonstrate the learning that has taken place.

Philosophy: Subject-specific guidance

See also: *Extended essay guide* and *Extended essay teacher support material*

Overview

An extended essay (EE) 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
- explore in a disciplined and imaginative way a specific philosophical question, in order to
- arrive at a clear conclusion.

The topic and research question need to be carefully chosen so that they lend themselves to critical investigation rather than to descriptive or narrative responses.

The research question must be formulated as a question, not a statement, and must have a narrow enough focus to be discussed effectively within the word limit.

Choice of topic

The student's choice of topic may be stimulated by, for example:

- work done in class
- current events or issues of contemporary debate
- private reading or reflection
- curiosity about conceptual features of knowledge, beliefs and value systems not previously encountered by the student.

Disciplinary focus

The topic must be explicitly philosophical in nature, rather than, say, anthropological or sociological. Students should reconsider or amend their topic if it is interdisciplinary in nature or is not directly related to philosophy.

The topic should be precise and sharply focused, so that students can treat it thoroughly. For example, it may be preferable to choose as a starting point:

- a specific hypothesis rather than a general one
- an idea from one philosopher rather than several
- a single text by a philosopher rather than the whole of his or her work.

Examples of topics

These examples are just for guidance. Students must ensure their choice of topic is focused (left-hand column) rather than broad (right-hand column).

Focused topics	Broad topics
Doing versus being: language and reality in the Mimamsa school of Indian philosophy	Language and the nature of reality
An examination of Herbert Marcuse's views on art	Philosophical aspects of art and esthetics
The notion of freedom of speech in Spinoza's *Theologico-Politico Treatise*	Ethics in the 17th century
John Rawls' procedure of justifying principles of social justice	Philosophical views of social justice
The role played by reason in Anselm's investigation of the concepts of predestination and free will	Anselm's exploration of the mysteries of faith

Formulating a research question

Students must choose a research question that is philosophically relevant, can be treated effectively within the word limit and that lends itself to critical analysis and evaluation.

Topics that are mainly dependent on summarizing general secondary sources (such as textbooks and encyclopedias) are likely to lead to an essay that is essentially narrative or descriptive in nature and should be avoided.

Treatment of the topic

The treatment of the research question should include:

- a careful critical analysis of themes and/or texts, leading to
- philosophical exploration and the construction of an argument.

It is strongly recommended that any student considering writing an EE in philosophy should first read the current *Philosophy guide* and understand its approach.

This approach, which allows many different approaches to philosophical reflection, is based on the emphasis of the Diploma Programme philosophy course on **doing** philosophy.

Within this context, the EE should encourage students to:

- develop the ability to reason and argue
- learn to take a personal and independent position on philosophical issues.

Students should construct a personal philosophical argument that should be cogent, clear and supported by relevant and, if possible, original examples.

Coherence of ideas and attention to detail are necessary conditions for an effective philosophy EE.

Students should envisage counterclaims or objections, address them and, if possible, rebut them.

They should also explore the wider implications of the issues they raise without becoming irrelevant.

Examples of topics, research questions and suggested approaches

Once students have identified their topic and written their research question, they can decide how to research their answer. They may find it helpful to write a statement outlining their broad approach. These examples are for guidance only.

Topic	**The moral status of stem cells**
Research question	Is it justified to ascribe a moral status to stem cells?
Approach	An exploration and justification of criteria that might allow a moral status to be ascribed to stem cells.

Topic	**Art and politics in Hannah Arendt's "The Crisis in Culture"**
Research question	Are art and politics opposed or are they complementary in Hannah Arendt's essay "The Crisis in Culture" ?
Approach	An investigation into the relation between art and politics in "The Crisis in Culture".

Topic	**The roots of wisdom according to the Tao Te Ching**
Research question	Does wisdom necessarily imply acting in accordance with the order of nature, according to the Tao Te Ching?
Approach	An exploration of the idea of wisdom according to the Tao Te Ching.

Topic	**Religious language and AJ Ayer's verification principle**
Research question	Are religious statements meaningless if they cannot be verified?
Approach	An examination of whether religious statements are meaningless if they cannot be verified, based on AJ Ayer's verification principle in *Language, Truth, and Logic*.

An important note on "double-dipping"

Students must ensure that their EE does not overlap significantly with any other work they are submitting for the Diploma Programme.

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The Philosophy EE and IA

In particular, an EE in philosophy is not an extension of the internal assessment (IA) task. Students must ensure that they understand the clear distinction between the IA and the EE. Whilst there is inevitably an overlap in the skills being developed, there are clear distinctions between the tasks; for example, the IA requires students to undertake a philosophical analysis of a non-philosophical stimulus.

Supervisors play an important role in guiding students on the distinctions between the two tasks. Students risk their diploma if academic misconduct is detected.

Interpreting the EE assessment criteria

Criterion A: Focus and method

(Strands: Topic, Research question, Methodology)

The topic selected should be precise and narrow enough that it can be treated thoroughly in the word count—for example, a specific idea from one philosopher, or a single text or part of a single text.

Topics must be directly related to philosophy and should not be interdisciplinary in nature.

The aim of the essay is best defined in the form of a question.

The research question must be clearly indicated at the start of the essay and must be formulated as a question. For example, "Does wisdom necessarily imply acting in accordance with the order of nature, according to the Tao Te Ching?"

The research question must be clearly philosophical or open to sustained philosophical analysis and argument.

Topics to avoid are:

- those mainly dependent on summarizing general secondary sources (eg textbooks and encyclopedias)
- those that are likely to lead to an essay that is essentially narrative or descriptive
- general topics that are not well focused.

Sources should include:

- the works of philosophers
- dictionaries of philosophy
- textbooks and encyclopedias.

If non-philosophical sources are used, there must be a clear rationale and the examination must be distinctly philosophical.

Criterion B: Knowledge and understanding

(Strands: Context, Subject-specific terminology and concepts)

The essay demonstrates the student's philosophical knowledge and understanding of the topic when it:

- 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 support the argument and to broaden the scope of the exploration
- 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.

The first step to demonstrating knowledge and understanding is shown at the early stages of the essay when the research question is framed within the context of existing knowledge that is directly related to the research question.

An appropriate use of language in a philosophy EE implies the following:

- 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
- a precise and consistent formulation of the argument presented, where each section is following on from and connected to the previous one
- analysis and use of philosophical language directly related to, and functional for, the specific investigation
- a clarification of the use of the main expressions; some of them (definition, concept, thought, experience, perception, world and so on) are also part of everyday language and should be explained in their conceptual use
- many thought processes and mental operations implied in philosophy research are directly related to the use of language.

Descriptions of what activities such as "outline", "examine" and "describe" mean can be found in the *Philosophy guide's glossary of command terms*.

Criterion C: Critical thinking

(Strands: Research, Analysis and Discussion and evaluation)

When the research question has been established, the proper planning of an essay should involve interrogating source material in light of the research question. The question should be explored through an examination of themes and/or texts. Students can use a wide range of sources, including works of philosophers, dictionaries of philosophy, textbooks, etc.

An appropriate and effective use of sources should take into account the following.

- Descriptive approaches are not adequate for this kind of philosophical investigation. Students must present any information concisely. It must be relevant and directly related to the point they are 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), students must examine it philosophically.
- If students make use of internet-based sources, they should do so critically and circumspectly in full awareness of their potential unreliability.
- Students' analysis must not rely exclusively on textbooks. These should only be consulted insofar as they may stimulate students' ideas, provide guidance and encourage the development of a personal analysis and investigation.

Analysis is at the heart of philosophical method, but can be practised in many ways. For example:

1. It consists of breaking an idea, a topic or a question down into its components.
2. It can 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.

Evaluation should be the result of students developing their exploration and own line of reasoning concerning the research question. (But this is not the same as 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.
- 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.

Students require both analytical and evaluative skills to explore the research question. These are essential skills for students to develop into independent researchers in philosophy.

Accordingly, students should:

- ask themselves what they think about the research question, 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 alternative 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.

Criterion D: Presentation

(Strands: Structure, Layout)

This criterion relates to the extent to which the essay conforms to accepted academic standards in relation to how research papers should be presented. It also relates to how well these elements support the reading, understanding and evaluation of the essay.

Students may provide a section and sub-section structure to their essays, with informative headings. sub-headings should not distract from the overall structure of the essay or argument presented.

Students should include a table of contents that includes a clear articulation of the main parts of the argument in answer to the research question. General and empty titles (such as introduction, development and conclusion) without reference to the specifics of the investigation are not helpful.

Any material that is not original must be carefully acknowledged, with specific attention paid to the acknowledgment and referencing of quotes and ideas. This acknowledgment and referencing is applicable to audio-visual material, text, graphs and data published in print and electronic sources. If the referencing does not meet the minimum standard as indicated in the guide (name of author, date of publication, title of source and page numbers as applicable), and is not consistently applied, work will be considered as a case of possible academic misconduct.

Effective referencing can help to demonstrate the extent to which the student expresses a relevant personal response to the research question. It can also enable the student to give a better and more precise justification of their argument, and can lead to an improvement in its consistency.

A bibliography is essential and has to be presented in a standard format. Title page, table of contents, page numbers, etc must contribute to the quality of presentation.

The essay must not exceed 4,000 words of narrative. Students should be aware that examiners will not read beyond the 4,000-word limit, nor assess any material presented thereafter.

Criterion E: Engagement

(Strands: Reflections on planning and progress)

This criterion assesses the student's engagement with their research focus and the research process. It will be applied by the examiner at the end of the assessment of the essay, after considering the student's *Reflections on planning and progress Form*

Students are expected to provide reflections on the decision-making and planning process undertaken in completing the essay. Students must demonstrate how they arrived at a topic as well as the methods and approach used. This criterion assesses the extent to which a student has evidenced the rationale for decisions made throughout the planning process and the skills and understandings developed.

For example, students may reflect on:

- the approach and strategies they chose, and their relative success
- the *Approaches to learning* skills they have developed and their effect on the student as a learner
- how their conceptual understandings have developed or changed as a result of their research
- setbacks they faced in their research and how they overcame these

- questions that emerged as a result of their research
- what they would do differently if they were to undertake the research again.

Effective reflection highlights the journey the student has engaged in through the EE process. Students must show evidence of critical and reflective thinking that goes beyond simply describing the procedures that have been followed.

The reflections must provide the examiner with an insight into **student** thinking, creativity and originality within the research process. The **student** voice must be clearly present and demonstrate the learning that has taken place.

Psychology: Subject-specific guidance

See also: *Extended essay guide* and *Extended essay teacher support material*

Overview

An extended essay (EE) in psychology gives students the opportunity to:

- investigate in depth a topic of their choice within the subject
- develop their skills in research, analysis and evaluation, and communication
- increase their understanding of behaviour from a psychology perspective.

Psychology may be defined as "the study of behaviour". The subject involves studying the behaviours of humans and non-human animals and has a range of specialist terms, methods and literature.

It is therefore essential for students undertaking an EE in psychology to:

- have a sound understanding of the subject and its methodologies
- choose a topic amenable to psychological investigation and analysis.

Students who have not studied psychology formally should not undertake the EE, unless they can demonstrate that they have sufficient knowledge and understanding of the subject.

Schools where psychology is not taught must be aware that students who submit an EE in psychology with no formal exposure to the subject may compromise their level of achievement.

Choice of topic

The topic may be an extension of an area covered on the Diploma Programme psychology course or a topic of interest outside the content covered.

When choosing their topic, students should remember that their EE must be based on secondary sources only. The collection of primary data is not permitted for the psychology EE (see Treatment of the topic).

The process of selecting a focused research question may be summarized as:

- choose a field in psychology of particular interest
- refine this choice to a specific topic
- develop a research question on this topic.

For example, a student might be interested in stress. They may then narrow this to the topic of stress within commercial aviation. Many large commercial airlines employ psychologists to investigate pilot performance and factors such as stress or emergency management. The student's research question could be: "To what extent does airline pilot stress affect airline safety standards? (See also "Examples of topics".)

Students must ensure that enough relevant and appropriate resources are available for them to conduct their research. They should investigate this at the start of their planning process.

The research question should require the construction of a systematically structured and fully supported argument in the development of an informed conclusion.

Supervisors do not necessarily require detailed knowledge of the student's topic.

Tricky topics

Topics within the fields of "pop psychology" or "self-help" will not be appropriate for the EE as they are not supported by peer-reviewed research studies.

Topics that do not lend themselves well to analysis, evaluation and debate are unlikely to be the best choices for a student.

Topics such as eating disorders, dysfunctional behaviours (eg schizophrenia or depression) and forensic psychology are popular with students. However, they pose a challenge unless students focus their research question very tightly. These topics are extremely ambitious, requiring far more time and experience than students generally have at their disposal.

Examples of topics

These examples are just for guidance. Students must ensure their choice of topic is focused (left-hand column) rather than broad (right-hand column).

Focused topics	Broad topics
The relationship between bilingualism and cognitive development	One- or two-language households
An examination of whether and how sleep contributes to learning	Sleep and learning
An examination of the extent to which music therapy is effective in enhancing the communication skills of individuals diagnosed with autism	Music and autism
The relationship between motivation techniques and performance in long-distance running	Motivation and achievement in sport

Treatment of the topic

Primary versus secondary data

Primary data collected using the students' own experiments, surveys, observations and case studies is inappropriate for the EE.

Instead, students must use secondary data from published sources. They should develop their argument with careful and appropriate citation of relevant concepts, theories and studies from academic psychological research journals and books.

Students should not make any assertions unsupported by evidence drawn from psychological theories or studies.

Analysis and discussion and evaluation

To develop a well-rounded understanding of their topic, students should carefully evaluate any research they cite. The essay should offer a balanced argument in response to the research question.

Students should demonstrate critical awareness and understanding of the material they use. They should analyse rather than simply describe. They need to apply what they have read to the research question rather than report the information.

One of the aims of all group 3 subjects is to enable the students to recognize that the content and methodologies of the subjects in group 3 are wide-ranging and require students to critically evaluate the choices they make with regard to methodologies. An EE in psychology should demonstrate such understanding.

The *Psychology guide* introduces a framework for evaluation. It trains students to address cultural, ethical, gender and methodological considerations potentially affecting how a particular study or theory interprets behaviour.

Comparative analysis may also be a useful evaluative strategy.

Students should keep these considerations in mind when selecting a topic, generating a research question and developing their argument.

Ethical guidelines

The IB has published a set of ethical guidelines that apply to the psychology EE and internal assessment task.

Many topics within psychology are sensitive in nature. Students should consider carefully all possible ethical issues before they embark on their essay. Students and supervisors share the responsibility for ensuring it does not breach the guidelines.

Examples of topics, research questions and suggested approaches

Once students have identified their topic and written their research question, they can decide how to research their answer. They may find it helpful to write a statement outlining their broad approach. These examples are for guidance only.

Topic	**Gender-related colour choices**
Research question	To what extent is preferred colour choice acquired or innate in young children?
Approach	• Recent fashions in the colours of children's clothing, furnishings and toys seem to have reverted from gender-neutral schemes to pink for girls and blue for boys. This provides

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	material for investigating the question of the extent to which such choices are the result of socialization or of innate predisposition. • A comparison of evaluated published research findings supporting each type of explanation, having linked the studies to relevant psychological theory. • Findings and related interpretations regarding the research question from different decades and/or cultural groups could be compared and evaluative commentary provided, focusing on addressing the "To what extent" aspect of the question, culminating in an informed summary conclusion.

Topic	**Media influences on altruistic behaviours**
Research question	To what extent do presentations in the media affect adult choices in volunteering to work for charities?
Approach	• An interest in social influences on pro-social behaviours in adults could result in curiosity about the factors affecting the varying levels of adult participation in volunteer activities. • Is there evidence or theory to suggest some individuals are more predisposed to pro-social behaviours than other individuals? • Use theory-based research into the efficacy of health campaigns to investigate the impact of media presentations on adult volunteer rates. • A balanced argument could evaluate evidence claiming support for the success of television adverts, personal presentations at meetings, newspaper articles, etc in recruiting adult volunteers for work with charities, comparing this with evidence to suggest personality type as a more dominant factor in pro-social behaviour. • The question covers a broad area including possible trans-historical and cross-cultural

	variations, so the essay's introduction should clearly indicate the chosen parameters.

An important note on "double-dipping"

Students must ensure that their EE does not duplicate other work they are submitting for the Diploma Programme.

The psychology EE and IA

In particular, an EE in psychology is not an extension of the internal assessment (IA) task. Students must ensure that they understand the differences between the two. Students and supervisors share the responsibility for ensuring the EE differs in intent, content, methodology and outcome from the IA.

Supervisors play an important role in guiding students on these distinctions. Students risk their diploma if academic misconduct is detected.

Interpreting the EE assessment criteria

Criterion A: Focus and method

(Strands: Topic, Research question, Methodology)

Students should state their choice of topic clearly at the start of the EE.

The research question must be:

1. expressed in question format
2. very precise
3. able to be fully addressed within the word limit.

It should be clear to the reader how the question relates to and is derived from the knowledge and understanding of the topic under consideration.

The introduction should provide the academic context and subsequent justification for the research question. The student should show how and why it is relevant for consideration in an academic context, indicating the current state of research and the discussions raised.

Although their personal interest in the topic is important, students' personal experiences and opinions are inappropriate here. Students must explain their approach to the topic. Their explanation needs to:

- outline the remit of the essay
- indicate the psychological theories and studies they will use and how
- enable the reader to see how the focus of the essay is to be maintained.

Psychological journals and books are appropriate resources. Materials from "pop psychology" and items from the media do not offer sufficient depth and academic rigour to develop an informed and balanced argument.

Students must select appropriate resources and make explicit reference to the research question throughout the essay to score highly against this criterion.

Where a student considers neuro-cognitive processing in relation to a behaviour, the focus of their essay should be on its impact on the behaviour or experience of the individual rather than on description of biological processing, however detailed and accurate.

Criterion B: Knowledge and understanding

(Strands: Context, Subject-specific terminology and concepts)

Students can provide evidence in several ways that they clearly understand the concepts and materials they are using and are able to communicate them effectively.

- Use of an appropriate academic style throughout, with the terminology of psychological research methods accurately and confidently applied.
- Psychological terminology consistently used in a manner that indicates understanding of theories and concepts.
- Appropriate and relevant choice of resources with which to explore the research question and support the argument being developed.
- Considered evaluation of evidence and findings from empirical studies and their related theories, in terms of culture, ethics, gender and methodology. This evaluation informs students' interpretation of the research question, contributing to perceptive commentary.

Criterion C: Critical thinking

(Strands: Research, Analysis and Discussion and evaluation)

This criterion is looking for critical engagement with appropriate material. Students must show throughout the essay that they can analyse and evaluate the psychological theory and published research they have selected to answer the research question.

In addition to choice of resources to demonstrate topic and research question knowledge, **how** the materials are used will be assessed in this criterion.

Throughout, students must use psychological theory and/or studies to justify points in the construction of their argument. They need to explain the material and explicitly link it to the research question.

The research question should be the central focus of the argument as it is developed throughout the essay. As they construct their argument, students must explain and analyse the different views found in the literature.

Their analysis must include:

- the context of the study or research (eg a consideration of the nature of participants and materials used)
- an awareness of possible researcher bias and methodological biases.

It is the responsibility of the student to persuade the reader of the reasons for, and validity of, their perspective. Students should evaluate the evidence at the point at which they introduce it rather than in a separate add-on section.

As in-depth treatment is required, essays that are largely descriptive or narrative in nature will not achieve highly against this criterion.

Students are expected to draw conclusions throughout the presentation of their essay and in a summative conclusion at the end. This must be consistent with the argument and evidence presented in the body of the essay. The conclusion is not the place for new evidence. However, it should include unresolved questions that have arisen from the discussion and which could be suitable for further study.

Criterion D: Presentation

(Strands: Structure, Layout)

This criterion relates to the extent to which the essay conforms to accepted academic standards in relation to how research papers should be presented. It also relates to how well these elements support the reading, understanding and evaluation of the essay.

Students may provide a section and sub-section structure to their essays, with informative headings. sub-headings should not distract from the overall structure of the essay or argument presented.

Use of charts, images and tables

Any charts, images or tables from literature sources included in the essay must be carefully selected and labelled and referenced. They should only be used if they are directly relevant to the research question, contribute towards the understanding of the argument and are of a good graphic quality.

Graphs or charts drawn from the analysed data should be selected to highlight only the most pertinent aspects related to the argument. Too many graphs, charts and tables will distract from the overall quality of the communication. Only summary data charts of information that is central to the argument of the essay should be included in the body of the essay.

Tables should enhance a written explanation but should not themselves include significant bodies of text. If they do, then these words must be included in the word count.

Students must take care in their use of appendices as examiners are not required to read them. All information with direct relevance to the analysis, discussion and evaluation of the essay must be contained in the main body of the essay.

Any material that is not original must be carefully acknowledged, with specific attention paid to the acknowledgment and referencing of quotations and ideas. This acknowledgment and referencing is applicable to audio-visual material, text, graphs and data published in print and electronic sources. If the referencing does not meet the minimum standard as indicated in the guide (name of author, date of publication, title of source and page numbers as applicable), and is not consistently applied, work will be considered as a case of possible academic misconduct.

A bibliography is essential and has to be presented in a standard format. Title page, table of contents, page numbers, etc must contribute to the quality of presentation.

The essay must not exceed 4,000 words of narrative. of narrative. Students should be aware that examiners will not read beyond the 4,000-word limit, nor assess any material presented thereafter.

Criterion E: Engagement

(Strands: Reflections on planning and progress)

This criterion assesses the student's engagement with their research focus and the research process. It will be applied by the examiner at the end of the assessment of the essay, after considering the student's *Reflections on planning and progress Form* (RPPF).

Students are expected to provide reflections on the decision-making and planning process undertaken in completing the essay. Students must demonstrate how they arrived at a topic as well as the methods and approach used. This criterion assesses the extent to which a student has evidenced the rationale for decisions made throughout the planning process and the skills and understandings developed.

For example, students may reflect on:

- the approach and strategies they chose, and their relative success
- the *Approaches to learning* skills they have developed and their effect on the student as a learner
- how their conceptual understandings have developed or changed as a result of their research
- setbacks they faced in their research and how they overcame these
- questions that emerged as a result of their research
- what they would do differently if they were to undertake the research again.

Effective reflection highlights the journey the student has engaged in through the EE process. Students must show evidence of critical and reflective thinking that goes beyond simply describing the procedures that have been followed.

The reflections must provide the examiner with an insight into **student** thinking, creativity and originality within the research process. The **student** voice must be clearly present and demonstrate the learning that has taken place.

Social and cultural anthropology: Subject-specific guidance

See also: *Extended essay guide* and *Extended essay teacher support material*

Overview

An extended essay (EE) in social and cultural anthropology gives students an opportunity to learn what constitutes a distinctively anthropological approach to the organization of human life in society and culture.

Students will explore anthropological perspectives and ways of thinking, and develop critical, reflexive knowledge in an in-depth manner through their chosen topic of inquiry.

They are encouraged to pursue a research question that will develop their analytical skills and an understanding of principles of social and cultural life; and to experience the excitement of academic discovery.

The most successful essays reveal students who are well informed about their topic, with their understanding solidly grounded in anthropological concepts and theory.

Social and cultural anthropology may be defined as "the comparative study of culture and human societies". The subject has its own theoretical and conceptual frames, terminology, methods and literature. It is therefore essential for students undertaking an EE in social and cultural anthropology to:

- be able to demonstrate knowledge and understanding of these
- choose a topic amenable to anthropological investigation.

Social and cultural anthropology is **not** a "residual" category for essays that do not fit into any other subject.

Students should not attempt to prepare an EE in social and cultural anthropology if they have not studied the subject formally.

Schools where it is not taught must be aware that students who submit EEs in the subject are risking being unable to meet the demands of the assessment criteria, and thus being awarded low marks.

Choice of topic

An EE in social and cultural anthropology allows students to investigate a topic of personal interest within the subject in a systematic manner.

It should be based on a focused research question that the student attempts to answer throughout the course of the essay. When choosing their topic, students should remember that their essay must be based on their reading of secondary sources. Primary data may only be used to supplement this (see Treatment of the topic).

Appropriate topics

Many topics are potentially suitable for an essay in social and cultural anthropology. Students should use the *Social and cultural anthropology guide* to ensure that their topic is appropriately anthropological.

An appropriate topic is one that:

- invites a critical examination of the issue in light of relevant anthropological theories and concepts, framing the argument within anthropological perspectives
- lends itself to a focused research question.

Topics that are too general almost inevitably lead to a discussion that is inappropriately descriptive and superficial. In contrast, more tightly focused essay topics encourage clear expositions of the research problem and its theoretical implications.

Examples of topics

These examples are just for guidance. Students must ensure their choice of topic is focused (left-hand column) rather than broad (right-hand column).

Focused topics	Broad topics
The political uses of the concept of culture: the case of the Islamic veil	Islam and the media
An investigation of food consumption as a symbolic marker of class identity in Cairo's Zamalek area	Food and social identity
Albanian sworn virgins: gender performance and subversion of patriarchy	Gender inequality
The authenticity of Japanese hip hop: global culture in a local context	Music and globalization

Personal interest

Personal commitment to the chosen topic is encouraged and often leads to successful essays.

However, students must be aware that an emotional or experiential commitment to a particular issue can weaken their analysis. Any personal commitment must be reinforced with appropriate anthropological theory and concepts, including explicit reference to what anthropologists have to say about an issue.

For instance, anthropologists have written a great deal about the role of women in Islam. To achieve high marks, an essay that addresses the issue from a theological interpretation of sacred texts, or from journalistic accounts, must frame the discussion within the context of anthropological research on religion and/or gender in specific societies.

Inappropriate topics

Students must bear in mind that their topic must encourage analysis and evaluation rather than description and unsupported value judgments.

Inappropriate topics are ones that:

- seek to find solutions to social problems in an abstract fashion
- consist of polemical arguments for a particular position
- present value judgments.

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.

Other subfields of anthropology

Topics from subfields of anthropology other than social and cultural anthropology, such as archeology, primatology or the study of human evolution, are inappropriate.

EEs 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 they may require background in linguistics as well as social and cultural anthropology.

Treatment of the topic

Research question

Students should craft a specific research question that is both interesting to them and challenging. It should be sufficiently narrow to allow examination of an issue in depth within the word limit. A limited topic thoroughly researched and with a clear focus is preferable to a broad topic that can only be examined superficially.

Sources

To address their research question students should provide a critical examination of the topic under study. They should gather and interpret material from sources relevant to the research question.

Primary versus secondary sources

The sole use of secondary sources is permitted and will allow students access to all levels of the EE assessment criteria. These sources include published ethnographic research and other relevant anthropological literature. Many successful essays are based solely on published data.

Primary data produced by students may be used as a supplementary research strategy, but **must not** be the focus of the essay. In particular, students are not permitted to use the data collected for their internal assessment task in an EE.

Analysis and evaluation

Students should apply analytical and evaluative skills appropriate to the subject, with an understanding of the implications and the context of their research. They should also acknowledge their sources and use subject-specific terminology.

Students' references to relevant anthropological concepts, theories and ethnographic studies must be integrated throughout the essay. These form the basis for the development of an argument in response to the research question.

The essay should go beyond description and include the student's own original analysis and identification of underlying patterns and causes. It must not merely summarize others' research findings. Research and claims should be carefully evaluated, and students' assertions should always be supported by evidence that is drawn from anthropological studies.

All the ethnographic data selected should be analysed in their social, cultural, political and historical contexts and explicit reference made to ethical issues involved. This applies to both published ethnographic materials and the student's own fieldwork, where undertaken.

Comparative projects

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 is too broad. The topic could be narrowed down by focusing on specific sub-groups of each society and a few well-chosen contrasting points. From these, the student would identify underlying patterns and causes.

Successful essays:

- show initiative in demonstrating how to approach anthropologically a topic of interest
- consistently place their research questions within an anthropological frame of reference
- produce balanced, nuanced arguments
- develop a critical approach to their own research and the work they cite.

Students should keep these considerations in mind when selecting a topic, defining a research question and developing an argument. Frequent reference to the assessment criteria by both the supervisor and the student will help keep a sharper focus on the project.

Examples of topics, research questions and suggested approaches

Once students have identified their topic and written their research question, they can decide how to research their answer. They may find it helpful to write a statement outlining their broad approach. These examples are for guidance only.

Topic	**The concept of resistance within anthropological theory—its interpretation and application in different contemporary ethnographies**
Research question	What constitutes the theoretical novelty and value of the concept of resistance and how is it applied in recent contemporary ethnographies?
Approach	An analysis and evaluation of the concept of resistance in relation to the debate on agency and structure, through the readings of ethnographies and subject literature on the topic. The study contextualizes the history of the concept within specific schools of thought, and discusses its application in some selected ethnographies to assess its theoretical value.

Topic	**A comparative study of two theoretical orientations of medical anthropology through an evaluation of the social and cultural factors related to the HIV/AIDS epidemic in sub-Saharan Africa**
Research question	Interpretive versus critical medical anthropology: which approach is the most useful in finding solutions to the HIV/AIDS epidemic in sub-Saharan Africa?
Approach	Based on secondary sources—mainly review of ethnographic and other anthropological works—a comparative analysis and evaluation of two theoretical orientations of medical anthropology and the different interventions motivated by each perspective. Social and cultural factors such as kinship structures and sorcery beliefs are analysed as chosen comparative points in relation to the two approaches.

Topic	**Gender and the body: Plastic surgery and social representations of the female body among urban, middle-class women of Montevideo, Uruguay**
Research question	What are the social representations of the feminine body that middle-class Uruguayan women hold, and to what extent are these influential in the practices of cosmetic plastic surgery?
Approach	Focusing on the concept of "legitimate" bodies, drawing from post-modern and symbolic approaches, this investigation uses both primary and secondary sources to address the phenomenon of the growing demand of esthetic surgeries among middle-class, urban women in Uruguay.

Topic	**Commodification and the body: An ethnographic study of social representations**

	about the human body with relation to organ donation
Research question	To what extent can we interpret the negative attitude from laymen towards organ donation as an act of resistance towards the demands of the hegemonic medical model? The case of organ donation in Argentina.
Approach	The study approaches the topic from symbolic theories, and the concepts of hegemony and resistance. The student's own field data from interviews and questionnaires supplements the investigation. The low rate of voluntary organ donations in Argentina is discussed in its relation to the conflict of meanings between the instrumental definition of body implicit in biomedicine and the lay symbolic representations of this concept.

Topic	**Social constraints and individual behaviour: The connection between emotions and the structure of society**
Research question	In what ways are emotions among the Utkuhikhalingmiut of the Canadian arctic connected to the structure of the society and how are they culturally regulated?
Approach	Using secondary sources—mainly two ethnographic works and other anthropological works on the topic—a discussion is put forward exploring social and cultural expression and regulation of emotions from a structural perspective.

An important note on "double-dipping"

Students must ensure that their EE does not overlap significantly with any other work they are submitting for the Diploma Programme.

The social and cultural anthropology EE and IA

In particular, the EE is not an extension of the internal assessment (IA) task. Students must ensure that they understand the differences between the two.

- Whereas the IA is based on primary sources, including fieldwork, the EE can only use primary sources as a supplement to secondary data and sources; the EE must be based on existing ethnographic material(s).
- The EE must construct a theoretical or conceptual framework for exploring an anthropological topic.
- The EE assesses explicitly a students' conceptual and/or theoretical understanding of the topic being researched and their ability to analyse and evaluate anthropological arguments.
- The IA is a report on fieldwork data collected, whereas the EE is an academic research paper.

Supervisors play an important role here in guiding students on these distinctions. Students risk their diploma if academic misconduct is detected.

Interpreting the EE assessment criteria

Criterion A: Focus and method

(Strands: Topic, Research question, Methodology)

The topic must be:

- suitable to be framed within the discipline's theory or concepts, researched and analysed in anthropological terms
- expressed in the form of a research question
- evident from the start of the essay.

The research question must be:

- focused
- capable of being discussed effectively within the word limit
- written in the form of a question
- identified clearly and set out prominently at the start of the essay.

The anthropological context of the research question should be clearly demonstrated, ie how it relates to existing subject knowledge on the topic and how the topic chosen is significant and worthy of investigation.

The student also needs to establish the essay's theoretical or conceptual frame, its purpose and focus early in the essay. They must demonstrate, too, that the research has been well planned.

Students should explore the research question within the theoretical and conceptual frames set out. Their main source of research should be secondary sources—published ethnographies and other subject literature.

Students may use their own fieldwork data as a primary source to complement and support their research strategy, but it should not be the focus of the essay. In all cases, the essay must make explicit reference to anthropological concepts and theory, drawing from ethnographic and anthropological readings.

Students must demonstrate that their chosen methods and materials are appropriate for addressing the research question. Students must also demonstrate that they have selected a suitable range of appropriate and relevant sources. These must provide sufficient material to develop and support both an argument and a conclusion relevant to the research question.

The rationale for choosing primary sources as part of the methodology should be clearly explained. Where students have undertaken their own field research they must clearly demonstrate their understanding of the methods applied and the reasons for their choices.

Criterion B: Knowledge and understanding

(Strands: Context, Subject-specific terminology and concepts)

Students should integrate into the discussion clear and explicit evidence of specific and relevant anthropological readings that allow the chosen topic to be examined in depth. They should also demonstrate a sound knowledge of anthropological concepts and theory relevant to the research question and locate the investigation in an academic context.

Whatever the focus of the investigation, the student must analyse all selected sources in their social, cultural, political and historical contexts. They must show they understand the theoretical and methodological problems involved in the collection, evaluation and presentation of ethnographic data.

Students must demonstrate the ability to apply sources and methods effectively in support of their argument.

All sources should be effectively referenced and incorporated into the main body of the essay in a way that demonstrates the students' understanding. Literature cited should predominantly come from acknowledged anthropological sources.

Students should be familiar with terminology specific to the discipline and be able to use it effectively. The awareness that some terms are contested or may change their meaning over time should be incorporated into the essay where relevant.

Criterion C: Critical thinking

(Strands: Research, Analysis and Discussion and evaluation)

The research undertaken must be relevant and appropriate to the research question. Students' selection of sources and data-collecting techniques, where applicable, depend on the goals of the research.

The material should always be examined from an anthropological perspective, using the theoretical underpinnings, analytical tools and methods of the discipline.

All selected primary and secondary sources should be analysed in their social, cultural, political and historical contexts.

Students must be aware of the ethical dimensions involved in the research process.

Students should be aware of the need to give their essays a solid foundation for developing an argument. The essay should move beyond mere description, and offer anthropologically sound generalizations and explanations.

The essay should include a clear discussion of underlying patterns and causes of an anthropological nature, and their relation to the topic in question. Straightforward descriptive or narrative accounts should be avoided.

The presentation of unsupported value judgments or conclusions of a prescriptive nature is inappropriate.

The conclusion should develop out of the argument and not introduce new evidence or extraneous matter. It should not repeat the introduction; rather it should present a new synthesis in light of the discussion.

Students should be encouraged to consistently adopt a critical, reflexive approach to the research so that they can identify its strengths, shortcomings and ethical dimensions.

Criterion D: Presentation

(Strands: Structure, Layout)

This criterion relates to the extent to which the essay conforms to accepted academic standards in relation to how research papers should be presented. It also relates to how well these elements support the reading, understanding and evaluation of the essay.

Students may provide a section and sub-section structure to their essays, with informative headings. sub-headings should not distract from the overall structure of the essay or argument presented.

Use of charts, images and tables

Any charts, images or tables from literature sources included in the essay must be carefully selected and labelled. They should only be used if they are directly relevant to the research question, contribute towards the understanding of the argument and are of a good graphic quality.

Tables of processed data should be designed to clearly display the information in the most appropriate form. Graphs or charts drawn from the analysed data should be selected to highlight only the most pertinent aspects related to the argument. Too many graphs, charts and tables will distract from the overall quality of the communication.

Only 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. Tables should enhance a written explanation but not themselves include significant bodies of text. If they do, then these words must be included in the word count.

Any material that is not original must be carefully acknowledged, with specific attention paid to the acknowledgment and referencing of quotes and ideas. This acknowledgment and referencing is applicable to audio-visual material, text, graphs and data published in print and electronic sources. If the referencing does not meet the minimum standard as indicated in the guide (name of author, date of publication, title of source and page numbers as applicable), and is not consistently applied, work will be considered as a case of possible academic misconduct.

A bibliography is essential and has to be presented in a standard format. Title page, table of contents, page numbers, etc must contribute to the quality of presentation.

The essay must not exceed 4,000 words of narrative. of narrative. Students should be aware that examiners will not read beyond the 4,000-word limit, nor assess any material presented thereafter.

Criterion E: Engagement

(Strands: Reflections on planning and progress)

This criterion assesses the student's engagement with their research focus and the research process. It will be applied by the examiner at the end of the assessment of the essay, after considering the student's *Reflections on planning and progress Form* (RPPF).

Students are expected to provide reflections on the decision-making and planning process undertaken in completing the essay. Students must demonstrate how they arrived at a topic as well as the methods and approach used. This criterion assesses the extent to which a student has evidenced the rationale for decisions made throughout the planning process and the skills and understandings developed.

For example, students may reflect on:

- the approach and strategies they chose, and their relative success
- the *Approaches to learning* skills they have developed and their effect on the student as a learner
- how their conceptual understandings have developed or changed as a result of their research
- setbacks they faced in their research and how they overcame these
- questions that emerged as a result of their research
- what they would do differently if they were to undertake the research again.

Effective reflection highlights the journey the student has engaged in through the EE process. Students must show evidence of critical and reflective thinking that goes beyond simply describing the procedures that have been followed.

The reflections must provide the examiner with an insight into **student** thinking, creativity and originality within the research process. The **student** voice must be clearly present and demonstrate the learning that has taken place.

World religions: Subject-specific guidance

See also: *Extended essay guide* and *Extended essay teacher support material*

Overview

An extended essay (EE) in world religions gives students the opportunity to undertake an in-depth investigation into a topic of their choice within the subject of world religions.

The essay should integrate disciplined research informed by scholarly methods with original and imaginative analysis and critical evaluation of the results of that research.

About the subject

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.

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 constituted by their actions and beliefs.

The result of writing an essay in world religions should be, among other things, improved intercultural understanding.

Students who are considering embarking on an EE in world religions are advised to study the subject's Diploma Programme syllabus. It 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
- they have sufficient knowledge and understanding of the subject to meet the assessment criteria.

Choice of topic

Students may choose to answer any well-defined question about any of the world's religions, present or past, subject to the following guidelines.

The topic must be appropriate to the subject. EEs must address the beliefs, values and practices of religious traditions and show a genuine understanding of the religion from the standpoint of its adherents.

Topics that are only indirectly related to religion—eg legal issues relating to school prayer, the wearing of religious symbols or the scientific validity of "creation science"—are not acceptable.

Students who have not followed a course in world religions should familiarize themselves with the discipline and its methodology before choosing a topic. For example, they could read an introductory text or study with a mentor who has significant background in the discipline. Local university departments of religious studies, or interdisciplinary humanities departments that include scholars of religion, may be able to help.

Specifically, students should note the following.

- An essay in world religions should avoid topics that involve making judgments about the truth value of religious beliefs. They should not be of a confessional, evangelical or apologetic nature.
- 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 broader social reality of which it is a part.
- Few religious traditions are monolithic, and so naive analyses of "Christianity" or "Buddhism" are unlikely to attain the depth necessary for an excellent EE. Students should be as specific as possible about exactly what they are studying.
- 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 students are capable of completing successfully, given their 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 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, artifact, space, ritual or other practice, or
- examine the significance of a well-defined concept in a particular religious tradition or comparatively across two different religious traditions.

Examples of topics

These examples are just for guidance. Students must ensure their choice of topic is focused (left-hand column) rather than broad (right-hand column).

Focused topics	Broad topics
An examination of the differences between the way in which Muslim legal schools (*fiqh*) and contemporary Muslim scholars approach the question of *jihad* and the impact this has	Questioning whether the Quran supports terrorism
Factors leading to the adoption of Theravada Buddhism in many South-East Asian countries	The difference between Mahayana and Theravada Buddhism
An examination of the reasons why fundamentalist Protestantism turned towards political activism in the 1970s in the USA	The Religious Right in America

Treatment of the topic

The first step in preparing an EE is to formulate a well-defined research question. The best questions are those that show that students are familiar with existing research and with the larger concerns of the discipline.

Research methods

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
- engage in participant observation of sacred spaces or religious practices.

Ethical guidelines

Students should obtain the permission of the leaders of religious communities before observing services and rituals.

They should also obtain the permission of anyone they interview, making it clear how the results will be used and how, if at all, the interviewees will be identified.

Sources

Students are encouraged to use both primary and secondary sources.

Secondary sources should be consulted in order to:

- locate students' topic within a broader context
- gain an understanding of various methods of investigation, analysis, interpretation and argument
- clarify the state of debate around the question.

The best essays generally test these established positions against primary sources or data collected for the EE.

Be cautious in using catechisms and encyclopedias

Catechisms should be used only as primary sources that provide evidence of the way doctrines are presented at the popular level. They are rarely definitive doctrinal statements and never scholarly studies.

Encyclopedias tend to summarize accepted scholarly results and often ignore or treat poorly the kind of disputed questions that make for a good EE. The more scholarly encyclopedias may be an exception, framing the "state of the question" with respect to a particular area of scholarship, but should only be a starting point, never a principal source.

Interpreting primary sources

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.

Methods of investigation and analysis must be appropriate to the topic and be well executed.

Essays that contain naive analyses and interpretations that reflect no training and could have been prepared without any formal study will not receive high scores.

Interviews

- In-depth interviews are an excellent way of finding out how ordinary members of a religious community understand and experience their religion. However, students must ensure they conduct a significant number of interviews with a diverse cross-section of the population being studied.
- Interviews should not be used naively 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.

Comparative studies

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:

- genuine, clear and specific
- a manifestation of sensitive and objective analysis.

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".

Comparison is made more difficult because religions tend to pose different questions rather than offer competing answers to the same questions.

Should the student or the supervisor have any doubts about the student's ability in these areas, a comparative study should be avoided.

Writing the essay

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.

Visual materials

The use of materials such as drawings, pictures and photographs should be encouraged where they appropriately illustrate the discussion or 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.

Examples of topics, research questions and suggested approaches

Once students have identified their topic and written their research question, they can decide how to research their answer. They may find it helpful to write a statement outlining their broad approach. These examples are for guidance only.

Topic	**Islamism: differences between al-Qaeda and ISIS**
Research question	What are the differences between al-Qaeda and ISIS with respect to the Caliphate?
Approach	A comparative analysis of documents from the two organizations, situated in the context of a review of the existing literature on the question.

Topic	**Spiritual but not religious**
Research question	What do people mean when they say that they are spiritual but not religious?
Approach	A series of in-depth interviews using a well-structured interview protocol exploring the meaning of spiritual and religion among those who say they are spiritual and religious, spiritual but not religious, and neither, situated in the context of a review of the existing literature on the question.

Topic	**An examination of tantric traditions**
Research question	Why do most tantric traditions make their teachings accessible only by oral transmission from teacher to student?
Approach	A study of the relevant tantras and secondary texts by both teachers within these traditions and scholars of these traditions, supplemented by in-depth interviews with teachers and practitioners.

Topic	**Women's ordination: an examination of resistance in some religious traditions**
Research question	Why are some religious traditions more resistant to the ordination of women than to comparable or more senior degrees of leadership in the secular arena?

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Approach	A reading of ecclesial and theological texts addressing the question of women's ordination in the light of feminist (and non-feminist) approaches to religion and gender.

Topic	**Experiencing sacred images**
Research question	How does iconoclasm (the rejection of making images of God) affect the experience of the sacred?
Approach	In-depth interviews of believers in an iconoclastic and a non-iconoclastic tradition exploring their experience of the sacred situated in the context of a review of the existing literature on the question.

An important note on "double-dipping"

Students must ensure that their EE does not overlap significantly with any other work they are submitting for the Diploma Programme.

The world religions EE and internal assessment

In particular, the EE is not an extension of the internal assessment (IA) task. Students must ensure that they understand the differences between the two.

- The EE is longer (4,000 as opposed to 1,800 words).
- The expectation is therefore of a more complex and complete investigation, which is evaluated across a much wider range of criteria, including the quality of the question, mastery of the intellectual context, and the appropriateness of the research method as well as the quality of the analysis, argument, writing and formal presentation.

Supervisors play an important role here in guiding students on these distinctions. Students risk their diploma if academic misconduct is detected.

Interpreting the EE assessment criteria

Criterion A: Focus and method

(Strands: Topic, Research question, Methodology)

In terms of the choice of topic, the research question must be specific and sharply focused and stated clearly in the introduction of the essay. It should be formulated as a question, not a statement or proposition for discussion. Students should frame a question in which the investigation of one or more religious phenomena plays a central role. Religion cannot be merely a peripheral dimension of the investigation.

The question should not be framed in a way that leads to an answer that is primarily confessional or polemical (ie an attempt to defend or critique specific religious beliefs).

Acceptable questions include:

- questions that involve the interpretation of the significance of religious beliefs or practices within a tradition
- questions of a comparative nature
- questions that explore the relationship between religion and other social phenomena (so long as the understanding of the religious aspect in question is a significant part of the task).

To gain the highest marks, the question must require the student to show an understanding of the state of research regarding the topic in the field of world religions and relevant related disciplines.

The methods chosen should be appropriate to the question and reflect an understanding of research methods. For example:

- a question concerning the meaning of a particular concept in the sacred scriptures of a tradition should use exegetical and hermeneutic methods
- a question about the significance of a concept in popular belief and practice might use in-depth interviews
- a question about theological or philosophical arguments regarding a religious issue might be based primarily on an examination of classical and contemporary scholars' views on the issue.

Finally, the question should be significant but also of a scope that can be meaningfully addressed within the word limit. This excludes questions to which the answers are obvious or involve simply the collection and reporting of information that is already well known and acceptable. It also excludes questions that are so broad as to require a book-length work to treat them meaningfully (such as a global comparison of all religious traditions, even on one question, much less on several).

Criterion B: Knowledge and understanding

(Strands: Context, Subject-specific terminology and concepts)

Since world religions is a field engaged by many disciplinary perspectives, the subject area or discipline in which the work is situated may vary. For example:

- scriptural exegesis and interpretation
- history of religions
- social-scientific study of religions
- philosophical or theological reflection on religious questions.

Students should show that they know which discipline they are writing within, understand its approach and are familiar with existing knowledge of the topic. They should show knowledge of the "state of the question".

If students are examining the topic from the perspective of more than one discipline, they must say that they are doing so and explain what each discipline is contributing to addressing the question.

For higher marks, the student should demonstrate correct use and understanding of discipline-specific:

- terms
- methods
- modes of analysis, interpretation and evaluation.

Criterion C: Critical thinking

(Strands: Research, Analysis and Discussion and evaluation)

Students should avoid presenting essays that are merely descriptive or narrative in character. This can be a challenge because students researching a religious tradition other than their own may find a great deal of what seems like new and interesting descriptive material, but the expectations of the EE go beyond this.

There should be appropriate analysis of the descriptive or factual material gathered. This might involve the use of:

- historical critical methods of scriptural exegesis
- statistical analysis of survey results
- qualitative analysis of in-depth interviews
- philosophical or theological analysis of arguments regarding questions in those disciplines.

The essay should take and defend a position, making an argument for the position taken and defending it in response to counter-arguments.

The essay should demonstrate some understanding of the significance of the research for the field or discipline and identify questions for further exploration.

Criterion D: Presentation

(Strands: Structure, Layout)

This criterion relates to the extent to which the essay conforms to accepted academic standards in relation to how research papers should be presented. It also relates to how well these elements support the reading, understanding and evaluation of the essay.

Students may provide a section and sub-section structure to their essays, with informative headings. sub-headings should not distract from the overall structure of the essay or argument presented.

Use of charts, images and tables

Any charts, images or tables from literature sources included in the essay must be carefully selected and labelled. They should only be used if they are directly relevant to the research question, contribute towards the understanding of the argument and are of a good graphic quality. Only selected materials that are central to the argument of the essay should be included in the body of the essay, as close as possible to its first reference.

Students must take care in their use of appendices as examiners are not required to read them.

All information with direct relevance to the analysis, discussion and evaluation of the essay must be contained in the main body of the essay.

Students should use standard methods of citing religious texts. Quotes from sacred scriptures, for example, should be by book, chapter and verse (John 1:5), or by sura, sutra or other traditional division, and not by page number. Translations and editions used should be indicated in the bibliography.

Any material that is not original must be carefully acknowledged, with specific attention paid to the acknowledgment and referencing of quotes and ideas. This acknowledgment and referencing is applicable to audio-visual material, text, graphs and data published in print and electronic sources. If the referencing does not meet the minimum standard as indicated in the guide (name of author, date of publication, title of source and page numbers as applicable), and is not consistently applied, work will be considered as a case of possible academic misconduct.

A bibliography is essential and has to be presented in a standard format. Title page, table of contents, page numbers, etc must contribute to the quality of presentation.

The essay must not exceed 4,000 words of narrative. Students should be aware that examiners will not read beyond the 4,000-word limit, nor assess any material presented thereafter.

Criterion E: Engagement

(Strands: Reflections on planning and progress)

This criterion assesses the student's engagement with their research focus and the research process. It will be applied by the examiner at the end of the assessment of the essay, after considering the student's *Reflections on planning and progress Form* (RPPF).

Students are expected to provide reflections on the decision-making and planning process undertaken in completing the essay. Students must demonstrate how they arrived at a topic as well as the methods and approach used. This criterion assesses the extent to which a student has evidenced the rationale for decisions made throughout the planning process and the skills and understandings developed.

For example, students may reflect on:

- the approach and strategies they chose, and their relative success
- the *Approaches to learning* skills they have developed and their effect on the student as a learner
- how their conceptual understandings have developed or changed as a result of their research
- setbacks they faced in their research and how they overcame these
- questions that emerged as a result of their research
- what they would do differently if they were to undertake the research again.

Effective reflection highlights the journey the student has engaged in through the EE process. Students must show evidence of critical and reflective thinking that goes beyond simply describing the procedures that have been followed.

The reflections must provide the examiner with an insight into **student** thinking Students should be aware that examiners will not read beyond the 4,000-word limit, nor assess any material presented thereafter.

The sciences

For an overview of writing an extended essay in the sciences, see The sciences: An introduction.

"Environmental systems and societies: Subject-specific guidance" is in the interdisciplinary essays section.

Biology: Subject-specific guidance

See also: *Extended essay guide* and *Extended essay teacher support material*

Overview

An extended essay (EE) 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.

Biology is the science that deals with living organisms and life processes. A biology EE should incorporate biological theory and emphasize the essential nature of this subject.

Choice of topic

The topic must allow an approach that relates specifically to biology. Where a topic can be approached from different viewpoints, the treatment of the material must be clearly biological. For example, an EE in an interdisciplinary area such as biochemistry will, if registered under the subject of biology, be judged solely on its biological content.

Essays that deal with human diseases can often be dealt with from a number of perspectives, such as biological, medical, social or economic. Such essays should focus on biological aspects of the disease rather than on medical diagnosis and treatment.

Similarly, essays that deal with sports physiology and physical fitness must have a clear biological emphasis. They must explore the issues from a biological viewpoint and provide biological explanations for the results.

Inappropriate topics

Some topics may be inadmissible because their means of investigation are unethical. For example, investigations that:

- are based on experiments likely to inflict pain on, or cause stress to, living organisms
- are likely to have a harmful effect on health, eg culturing micro-organisms at or near body temperature (37°C)
- involve access to, or publication of, confidential medical information.

In all cases where human subjects are used as the basis for an investigation, clear evidence of informed consent must be provided in accordance with the IB guidelines.

Some topics may be unsuitable because of safety issues. Adequate safety apparatus and qualified supervision is required for experiments involving dangerous substances such as:

- toxic or dangerous chemicals
- carcinogenic substances
- radioactive materials.

Other topics may be unsuitable because the outcome is already well known and documented in standard textbooks.

Examples of topics

These examples are just for guidance. Students must ensure their choice of topic is focused (left-hand column) rather than broad (right-hand column).

Focused topics	Broad topics
The effect of detergent toxicity on soil bacteria	Detergents in the environment
A study of malnourished children in Indonesia and the extent of their recovery after a period of supervised improved nutrition	Malnutrition in children
A study of the effect of differing pH levels on the growth of *Phaseolus vulgaris*	The effect of acidity on plant growth
The competitive and evolutionary nature of the symbiotic relationship in *Paramecium bursaria*	Symbiosis
The effect of banana peel on seed germination	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	Uses of the gel electrophoresis technique

Treatment of the topic

Students should explain early in the essay how they arrived at their research question and narrowed it down, by briefly outlining aspects they are not considering 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.

Primary research

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.

Essays that involve practical work carried out in the laboratory, or fieldwork, should include a clear and concise description of the experimental procedure.

Students taking an experimental approach must also consult secondary sources.

Secondary research

Alternatively, students can base their essays on data or information obtained from literature. Ideally, they can use the data and manipulate or analyse it in an original way. 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 they have access to sufficient data or information to research the topic effectively.

Students should attempt to specify how the research approach and methodology were decided, and show any approaches that were considered and rejected.

Supervision

Ideally, students should carry out the research for the essay solely under the direction of a school supervisor. Some of the IB's best essays have been written by students investigating relatively simple phenomena using standard school apparatus and this approach is to be encouraged.

All 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.

Writing the essay

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.

Students should ensure that the main body of the essay is well structured and has an obvious logical progression. They can use numbered and headed paragraphs to impose a clear structure. Their evaluation should show they understand the results and their significance in the context of wider academic reading on the topic.

Students should provide some explanation of anomalies or unexpected outcomes as well as explore alternative explanations for their findings. If necessary, they should propose modifications to hypotheses presented earlier in the essay and suggest a research approach for testing these.

Students must be encouraged to undertake a critical evaluation of the work they have done. In their analysis, they 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.

They should also consider biological limitations such as:

- those arising from the problem of repeatability and control when using living material
- the difficulties of generalizing from research based on a single type of organism or environment.

Examples of topics, research questions and suggested approaches

Once students have identified their topic and written their research question, they can decide how to research their answer. They may find it helpful to write a statement outlining their broad approach. These examples are for guidance only.

Topic	**The effect of soil salinity on the distribution and abundance of a halophyte in a salt marsh community**
Research question	To what extent is the distribution and abundance of the sea aster (*Tripolium pannonicum*) dependent on soil salinity?
Approach	Survey of vegetation using ecological techniques such as quadrat sampling to measure distribution and abundance, and a conductivity meter to measure salinity in soil samples.

Topic	**Urease from soy beans**
Research question	How does the level of urease activity differ between dried and fresh soy beans?
Approach	The enzyme is extracted from dried and fresh soy beans. Urease activity is measured by monitoring the pH of the solution using a suitable approach such as a pH probe or indicator.

Topic	**Antibacterial effects of a plant extract**
Research question	What evidence is there for the antibacterial properties of commercially available mouthwash on *Streptococcus mutans* (or other safe/approved strain) grown at 20°C?
Approach	Cultures of *S.mutans* are grown on agar plates with a suitable growth medium. Filter paper discs soaked in various concentrations of mouthwash are placed on inoculated plates and zones of inhibition are measured after a period of incubation.

An important note on "double-dipping"

Students must ensure that their EE does not duplicate other work they are submitting for the Diploma Programme. For example, data collected for experiments undertaken as part of science lessons or the internal assessment task cannot be used as the basis of the EE in biology.

The biology EE and internal assessment

An EE in biology is not an extension of the internal assessment (IA) task. Students must ensure that they understand the differences between the two.

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

Supervisors play an important role in guiding students on these distinctions. Students risk their diploma if academic misconduct is detected.

Interpreting the assessment criteria

Criterion A: Focus and method

(Strands: Topic, Research question, Methodology)

The topic of the biology EE must be outlined at the start of the essay and should clearly establish the context of the research question. This should include the area of the research and the purpose and focus of the essay.

It is usually appropriate also to include the general background biological theory required to understand how the research question has arisen. For example, an essay's topic may be "Factors affecting the distribution of seagrass in Californian bays". The explanation of this topic may include reference to inshore ecosystems, pollution, the decline in seagrasses and the possible relationship to sea otter populations.

The research question must be expressed in the form of a question. It should be the precisely formulated question that the research will attempt to answer. The research question based on factors affecting the distribution of seagrass in Californian bays could be: "How do different concentrations of ammonium nitrate in sea water tanks affect the growth of seagrass (*Zostera spp)* over a three-month period?"

The research question must be:

- answerable within the limitations of resources, time and words at the student's disposal
- identified clearly
- clearly set within the academic framework of biology

- set out prominently at the start of the essay.

The student can then use the research question to formulate a hypothesis, or hypotheses, which can be tested.

Students need to demonstrate within the essay that the research has been well planned. They should show that they have researched the topic and selected an appropriate biological approach to address the research question. This applies both to their literature research and to practical data collection.

Students must demonstrate that their chosen methods and materials are appropriate for addressing the research question. They should explain their rationale for choosing practical methods. If they undertake experimental work, they must include sufficient information on their methodology for the work to be repeated.

The sources consulted must be sufficient and each must contribute to the research focus of the essay. If the study is based on the research of secondary data, students need to ensure that their selection of sources is sufficiently wide and reliable.

If students have undertaken an investigation under guidance in an external laboratory, they must clearly demonstrate:

- their understanding of the methods and materials applied
- their role in choosing and applying them.

If students are investigating a well-documented or standard topic, they should attempt to look for a new perspective on the issue.

Criterion B: Knowledge and understanding

(Strands: Context, Subject-specific terminology and concepts)

Experimental work is not a requirement for a biology EE. However, a theoretical dimension must be part of any empirical investigation.

The source materials accessed should be:

- clearly relevant and appropriate to the research question
- effectively referenced and incorporated into the body of the essay in a way that demonstrates the student's understanding
- predominantly from acknowledged scientific sources.

Students must demonstrate the ability to apply their selected sources and methods effectively in making relevant connections and in support of their argument.

Students 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 and focus on communicating clearly.

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.

Symbols, equations, significant digits and SI units should be applied appropriately and consistently.

Criterion C: Critical thinking

(Strands: Research, Analysis and Discussion and evaluation)

The "research" refers to both literature sources and data collected and processed by the students themselves. This research must be consistently relevant to the research question.

Presentation and use of data

The student is expected to appropriately present and analyse the data and sources and related uncertainties. This analysis will often include:

- mathematical transformations
- statistical analysis such as standard deviations and *t*-tests
- tables of processed data
- graphs.

If the data are analysed statistically, the student must clearly show understanding in the body of the essay of:

- why that particular measure or test was chosen
- how it was applied
- what the results mean in this context.

If graphs are used, they must be correctly selected and drawn to illustrate key elements of the analysis. They should only be included if they improve communication.

Students must analyse and present their data in such a way that they support and clarify the argument leading to the conclusion.

Students 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.

The stated conclusion(s) must be based on, and consistent with, the research presented in the essay. Biological research often reveals unexpected outcomes and these should be pointed out.

The original research question may not be fully answered by the investigation. In these cases, the student may point out unresolved issues and may make suggestions as to how these might be further investigated.

The student must comment on the quality, balance and quantity of the secondary sources and data used. They are also expected to show an awareness of any limitations or uncertainties inherent in their approach. In particular, they should critically comment on the validity and reliability of their data relative to their management of variables within the investigation.

Criterion D: Presentation

(Strands: Structure, Layout)

This criterion relates to the extent to which the essay conforms to accepted academic standards in relation to how research papers should be presented. It also relates to how well these elements support the reading, understanding and evaluation of the essay.

Structure

Students may use numbered and headed paragraphs to impose a clear structure. sub-headings should not distract from the overall structure of the essay or argument presented.

Recording experiments

Students should aim for scientific paper style, rather than a cookery book recipe approach. The record should include:

- a scientific annotated diagram to introduce key elements of the set-up
- relevant details of key equipment
- a summary of the essential procedural steps.

Students should avoid including minor or irrelevant details and repetitions, but must include those elements needed for reliability and replicability.

Charts, images, graphs and tables

- Any graphs, figures or tables generated by students or taken from literature sources must be carefully selected and labelled. They should only be used if they are directly relevant to the research question, contribute towards the understanding of the argument and are of a good graphic quality.
- Students must accompany images, charts and tables with analysis and discussion to show how they further the essay's argument.
- Only 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.
- Tables should enhance a written explanation but not themselves include significant bodies of text. If they do, then these words must be included in the word count.
- Clarity in tables and graphs (legend) is important and students should not use unnecessary "over-formatting" that may detract from communication.

- A representative sample of raw data collected in large amounts by the student must be included in the core of the essay in a data table, including uncertainties and units. Any table should be designed to clearly display the information in the most appropriate form.
- Large tables of raw data collected by the student are best included in an appendix, where they should be carefully labelled.
- Graphs or charts drawn from the analysed data should be selected to highlight only the most pertinent aspects related to the argument. Too many graphs, charts and tables will detract from the overall quality of the communication.
- The use of a summary table and the combination of multiple graphs into one graph (family of curves) will avoid unnecessary repetitions.
- Students should illustrate key mathematical transformations with examples. Equations referred to in the text should be numbered.

Any material that is not original must be carefully acknowledged, with specific attention paid to the acknowledgment and referencing of quotes and ideas. This acknowledgment and referencing is applicable to audio-visual material, text, graphs and data published in print and electronic sources. If the referencing does not meet the minimum standard as indicated in the guide (name of author, date of publication, title of source and page numbers as applicable), and is not consistently applied, work will be considered as a case of possible academic misconduct.

A bibliography is essential and has to be presented in a standard format. Title page, table of contents, page numbers, etc must contribute to the quality of presentation.

The essay must not exceed 4,000 words of narrative. Graphs, figures, calculations, diagrams, formulas and equations are not included in the word count. Students must be aware that examiners will not read beyond the 4,000-word limit, nor assess any material presented past this.

Criterion E: Engagement

(Strands: Reflections on planning and progress)

This criterion assesses the student's engagement with their research focus and the research process. It will be applied by the examiner at the end of the assessment of the essay, after considering the student's *Reflections on planning and progress Form* (RPPF).

Students are expected to provide reflections on the decision-making and planning process undertaken in completing the essay. Students must demonstrate how they arrived at a topic as well as the methods and approach used. This criterion assesses the extent to which a student has evidenced the rationale for decisions made throughout the planning process and the skills and understandings developed.

For example, students may reflect on:

- the approach and strategies they chose, and their relative success
- the *Approaches to learning* skills they have developed and their effect on the student as a learner
- how their conceptual understandings have developed or changed as a result of their research

- setbacks they faced in their research and how they overcame these
- questions that emerged as a result of their research
- what they would do differently if they were to undertake the research again.

Effective reflection highlights the journey the student has engaged in through the EE process. Students must show evidence of critical and reflective thinking that goes beyond simply describing the procedures that have been followed.

The reflections must provide the examiner with an insight into **student** thinking, creativity and originality within the research process. The **student** voice must be clearly present and demonstrate the learning that has taken place.

Chemistry: Subject-specific guidance

See also: *Extended essay guide* and *Extended essay teacher support material*

Overview

An extended essay (EE) in chemistry provides students with an opportunity to investigate a specific aspect of a material of our environment. The essay must be characterized by a particular chemical emphasis within a more general set of research criteria.

Chemistry is the science that deals with the composition, characterization and transformation of substances. A chemistry EE should incorporate chemical principles and theory, and emphasize the study of matter and of the changes it undergoes.

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

Choice of topic

The topic must allow an approach that specifically involves chemistry. Where a topic might be approached from different viewpoints, the treatment of the material must be from a chemistry perspective. For example, an EE in an option area of the IB syllabus such as biochemistry will, if registered as a chemistry EE, be judged on its content within the scope of the biochemistry option of the syllabus.

The scope of the topic and the research associated with it should enable all the criteria to be addressed. The research question must be sharply focused and able to be treated effectively within the word limit.

Suitability of topics

Broad or complex literature-based topics do not allow the student to discuss conflicting ideas and theories, nor to produce an in-depth personal analysis within the word limit. Students should therefore avoid these topics (eg investigations into health problems caused by water pollution, chemotherapy for cancer treatment or the use of spectroscopy in chemical analysis).

Some topics may be unsuitable for investigation because of safety issues. These are clearly stated in the chemistry guide and all students must be aware of them before embarking on their EE. Experiments involving toxic or dangerous chemicals, carcinogenic substances or radioactive materials are strictly prohibited.

Other topics may be unsuitable because the outcome is already well known and documented in standard textbooks.

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.

Examples of topics

These examples are just for guidance. Students must ensure their choice of topic is focused (left-hand column) rather than broad (right-hand column).

Focused topics	Broad topics
Determination of chloride, nitrate and calcium ion concentration in sea water	Study of sea water
Spectrophotometric determination of vitamin B2 content in cow's milk	Study of milk
Investigating the possibility of substituting hydrazine for kerosene as a rocket fuel	Theoretical investigation of hydrazine
Extracting DNA from peas using two different primary alcohols	DNA in plants

Once they have chosen their topic, students must then further define and refine it for study by expressing it in the form of a research question.

Treatment of the topic

An EE in chemistry may be based on:

- literature
- theoretical models
- experimental data.

Whichever approach is chosen, the student must ensure that they have access to sufficient data to research the topic effectively.

Students who choose to write a literature- or survey-based essay should ensure that it 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
- online sources
- textbooks.

The internet should never be the sole 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 used an existing method. If they use an existing method, they must give its source and state how they have adapted and improved upon it.

Supervision

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.

The supervisor has the responsibility to ensure that students understand that the EE must not duplicate the research topic, data or the results of the internal assessment. A statement to that effect should be included in the supervisor's comment on the cover of the EE.

Generating and presenting data should not be an end in itself; students must analyse data using appropriate techniques, evaluate it and where appropriate compare it with appropriate models or literature values.

Use of secondary data

Students can also use data collected elsewhere. For example, for a research question that requires calculation of enthalpy changes in reactions, students can obtain average bond enthalpies from databases and manipulate these in order to answer the question.

However, to achieve high marks, students must devise their own method to analyse the secondary data in a way that leads to a specific answer to their research question.

In any chemistry EE, students must 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. Throughout the essay, students should emphasize clearly their own personal contribution.

Examples of topics, research questions and suggested approaches

Once students have identified their topic and written their research question, they can decide how to research their answer. They may find it helpful to write a statement outlining their broad approach. These examples are for guidance only.

Topic	**The effect of storage temperature on alkaline battery discharge time**
Research question	What is the effect of storage temperature on the operational lifespan of an alkaline battery?
Approach	Experimental: set of 3 batteries is subjected to 5°C, 20°C, 30°C, 40°C, 50°C for a specific period of time, after which the batteries are discharged. Voltage is measured before and after storage period.

Topic	**Investigation of changing reflux time on the yield of aspirin**
Research question	Does increasing reflux time increase the percent yield of aspirin for the reaction between acetic anhydride and salicylic acid?
Approach	Experimental: aspirin is produced from acetic anhydride and salicylic acid at varying reflux time intervals.

Topic	**Replacement of coal with natural gas for electric power generation**
Research question	What would be the reduction in CO_2 emission (measured as % change by mass) in Germany of replacing all coal-fired power plants with modern CH_4 power stations?
Approach	Data based: calculate the CO_2 emission per kWh using public domain data for the heat of combustion, composition and efficiency of coal and natural gas power plants.

Topic	**Periodic properties of super-heavy elements 113–118**
Research question	Can the physical and chemical properties of the undiscovered elements be predicted using the law of periodicity?
Approach	Literature based: examine the ionization potential, electron affinity and other periodic trends, predict if the super-heavy elements obey the periodic law.

An important note on "double-dipping"

Students must ensure that their EE does not duplicate other work they are submitting for the Diploma Programme.

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The chemistry EE and internal assessment

An EE in chemistry is not an extension of the internal assessment (IA) task. Students must ensure that they understand the differences between the two.

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

Supervisors play an important role in guiding students on these distinctions. Students risk their diploma if academic misconduct is detected.

Interpreting the EE assessment criteria

Criterion A: Focus and method

(Strands: Topic, Research question, Methodology)

The EE in chemistry must have a clear chemical emphasis and should focus on the chemistry aspect of the investigation.

It should incorporate chemical principles and relate to the study of matter and its chemical changes.

The topic can come from:

- the core
- the AHL topics or
- one of the IB chemistry options of the syllabus.

However, the emphasis should be on chemistry.

The research question must be formulated as an actual question, such as "Can the spectator ions influence the rate of oxidation-reduction reaction?"

To address the research question the student must research the existing literature on the topic and choose an appropriate methodology to pursue the investigation by:

- undertaking work in the laboratory or
- basing their research on existing data.

If practical work is undertaken, the rationale for choosing the procedure should be clearly explained.

If the investigation is undertaken in an external laboratory, students have to show clearly their understanding of the methods and materials, and their role in collecting the data.

Criterion B: Knowledge and understanding

(Strands: Context, Subject-specific terminology and concepts)

Students are expected to show understanding of the relevant chemical principles and ideas and to apply them correctly.

Students must demonstrate clearly the underlying chemistry behind the research question and the techniques and apparatus chosen.

The source materials accessed should be:

- clearly relevant and appropriate to the research question
- effectively referenced and incorporated into the main body of the essay in a way that demonstrates the students' understanding.

Literature cited should predominantly come from acknowledged scientific sources.

Students must demonstrate the ability to apply their selected sources and methods effectively in support of their argument.

The student must try to maintain a consistent linguistic style throughout the essay.

Chemical nomenclature and terminology should be used consistently and effectively throughout the essay. Students should also use appropriately and consistently:

- relevant chemical and structural formulas
- balanced equations with state symbols
- mechanisms of reactions
- significant digits
- SI units.

Criterion C: Critical thinking

(Strands: Research, Analysis and Discussion and evaluation)

In a chemistry EE, the "research" refers to both literature sources and data collected by the students themselves. This research must be consistently relevant to the research question.

The student is expected to appropriately present and analyse the data. This analysis will often include:

- mathematical transformations
- statistical analysis
- tables of processed data and graphs.

If the data are analysed statistically, the student must clearly show understanding of why that particular test was chosen and what the results mean.

If graphs are used, they must be correctly selected and drawn to illustrate key elements of the analysis. They should only be included if they improve communication.

Students must analyse and present their data in such a way that they support and clarify the argument leading to the conclusion.

Students must make a particular 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.

An assessment of the extent to which the question is answered, either by the data or by information accessed, should form part of the argument.

The stated conclusion(s) must be based on and be consistent with the research presented in the essay.

The original research question need 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.

Inadequate experimental design or any systematic errors should be exposed. The uncertainties of the measurements should be evaluated and discussed.

The student must comment on the quality, balance and quantity of their sources. Students are expected to show an awareness of any limitations or uncertainties inherent in their approach. In particular, they should critically comment on the validity and reliability of their data relative to their management of variables within the investigation.

Criterion D: Presentation

(Strands: Structure, Layout)

This criterion relates to the extent to which the essay conforms to accepted academic standards in relation to how research papers should be presented. It also relates to how well these elements support the reading, understanding and evaluation of the essay.

Students may use numbered and headed paragraphs to impose a clear structure. sub-headings should not distract from the overall structure of the essay or argument presented.

Use of charts, images and tables

Any charts, images or tables from literature sources included in the essay must be carefully selected and labelled. They should only be used if they are directly relevant to the research question, contribute towards the understanding of the argument and are of a good graphic quality.

Large tables of raw data collected by the student are best included in an appendix, where they should be carefully labelled. Tables of processed data should be designed to clearly display the information in the most appropriate form. Graphs or charts drawn from the analysed data should be selected to highlight only the most pertinent aspects related to the argument. Too many graphs, charts and tables will distract from the overall quality of the communication.

Only 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. Tables should enhance a written explanation but not themselves include significant bodies of text. If they do, then these words must be included in the word count.

If an experimental method is long and complex, students may place the raw data in an appendix and include a summary of the methods in the body of the essay. Students who choose this option must be careful to ensure that the summary contains all elements that contribute to the quality of the investigation, since appendices are not an essential section of the EE and examiners are not required to read them.

In other words, any important information that contributes to the evaluation of the method must be in the body of the essay and not the appendix. 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 in the main body of the essay. The remainder can be displayed in tabular or graphical form.

Any material that is not original must be carefully acknowledged, with specific attention paid to the acknowledgment and referencing of quotes and ideas. This acknowledgment and referencing is applicable to audio-visual material, text, graphs and data published in print and electronic sources. If the referencing does not meet the minimum standard as indicated in the guide (name of author, date of publication, title of source and page numbers as applicable), and is not consistently applied, work will be considered as a case of possible academic misconduct.

A bibliography is essential and has to be presented in a standard format. Title page, table of contents, page numbers, etc must contribute to the quality of presentation.

The essay must not exceed 4,000 words of narrative. Students should be aware that examiners will not read beyond the 4,000-word limit, nor assess any material presented thereafter. Graphs, figures, calculations, diagrams, formulas and equations are not included in the word count.

Criterion E: Engagement

(Strands: Reflections on planning and progress)

This criterion assesses the student's engagement with their research focus and the research process. It will be applied by the examiner at the end of the assessment of the essay, after considering the student's *Reflections on planning and progress Form* (RPPF).

Students are expected to provide reflections on the decision-making and planning process undertaken in completing the essay. Students must demonstrate how they arrived at a topic as well as the methods and approach used. This criterion assesses the extent to which a student has evidenced the rationale for decisions made throughout the planning process and the skills and understandings developed.

For example, students may reflect on:

- the approach and strategies they chose, and their relative success
- the *Approaches to learning* skills they have developed and their effect on the student as a learner
- how their conceptual understandings have developed or changed as a result of their research
- setbacks they faced in their research and how they overcame these
- questions that emerged as a result of their research
- what they would do differently if they were to undertake the research again.

Effective reflection highlights the journey the student has engaged in through the EE process. Students must show evidence of critical and reflective thinking that goes beyond simply describing the procedures that have been followed.

The reflections must provide the examiner with an insight into **student** thinking, creativity and originality within the research process. The **student** voice must be clearly present and demonstrate the learning that has taken place.

Computer science: Subject-specific guidance

See also: *Extended essay guide* and *Extended essay teacher support material*

Overview

An extended essay (EE) 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 rapidly changing subject that 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 science and explores beneath the surface of this subject.

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 unless the specific techniques employed are of particular relevance to the research question.

The EE is not in any way to be confused with the computer science project 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 EE 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 HL paper 3 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 taken to a far greater depth than that provided in the course
- 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 or resources.

Examples of topics

These examples are just for guidance. Students must ensure their choice of topic is focused (left-hand column) rather than broad (right-hand column).

Focused topics	Broad topics
A comparison of overclocking and pipelining in terms of efficiency in enhancing the performance of CMOS processors	Factors that affect processor speeds
Advances in processing power that question the need for complicated sorting algorithms	The future of sorting algorithms
Assessing the level of data compression in music files that is acceptable to the human ear	Data compression techniques
An evaluation of secure sockets layer (SSL) protocol	Internet security

It may help for the student to start with a broad topic or area of interest, then undertake some initial secondary research before refining their topic into a more focused area and developing a preliminary research question.

Additionally, adding a statement of intent that indicates which broad process is going to be used in answering the question will help to ensure students remain focused on their research question.

Treatment of the topic

An EE in computer science is not intended as a vehicle to demonstrate programming skills. These are demonstrated in the computer science project (the internal assessment requirement of the computer science course).

The EE is an opportunity for students to be creative in a different sphere—that of independent, personal research.

While an EE 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 EE to support the design and the discussion, the full program code (including internal documentation) should appear in an appendix as evidence.

Futuristic topics in computer science should be based on sound theory and projections of well-known computer science authorities.

Students are expected to support personal conclusions with 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 both critically evaluate the resources consulted during the process of writing the essay and to expand on the material gathered from these sources in order to make any technical information understandable to a reader who might not be a specialist in the subject.

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

Examples of topics, research questions and suggested approaches

Once students have identified their topic and written their research question, they can decide how to research their answer. They may find it helpful to write a statement outlining their broad approach. These examples are for guidance only.

Topic	**Advances in machine learning: the effectiveness of reinforcement learning in turn-based strategy games**

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Research question	How effective is reinforcement learning for improving performance in turn-based strategy games?
Approach	A practical investigation involving the comparison of the success of different algorithms in the playing of the Connect-4 game.

Topic	**The feasibility of wireless networking in a city-wide context**
Research question	To what extent 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.

Topic	**Advances in computer processing**
Research question	How likely is it that fuzzy logic will replace binary logic in the next five years?
Approach	An investigation into the current state of implementation of multi-state logic and the differences between this and binary state logic.

An important note on "double-dipping"

Students must ensure that their EE does not duplicate other work they are submitting for the Diploma Programme.

The computer science EE and internal assessment

In particular, an EE in computer science is not an extension of the internal assessment (IA) task. Students must ensure that they understand the differences between the two.

- Students are not permitted to use any of the data generated as part of their computer science solution (IA) for the EE.
- Whereas the IA may focus on any aspect of computer science, an EE must not primarily be concerned with designing computer programs, although an evaluation of an existing program is permitted.

Supervisors play an important role in guiding students on these distinctions. Students risk their diploma if academic misconduct is detected.

Interpreting the EE assessment criteria

Criterion A: Focus and method

(Strands: Topic, Research question, Methodology)

The title should clearly indicate the area of research, with the underlying computer science forming the principle basis of the essay.

Students should avoid topics that deal primarily with social aspects of information technology that would lie more within the subject ITGS (eg "The value of friendships attained through social networking sites").

The research question must be sharply focused in order to allow for significant research into the topic at an appropriate depth. At the same time the topic must be accessible to an IB student.

Broad topics (eg "To what extent is the variety of different computer languages in existence beneficial or problematic for programmers") will only lead to superficial treatment within the 4,000-word limit.

Students should avoid choosing futuristic topics (eg "AI/robots in the next century"), which generally lead to opinion-based essays that are backed up with few facts. A journalistic approach should also be avoided as this will tend to lead to a superficial treatment of any computer science.

The research question must be in the form of a question and should be stated in the introduction to the essay, and the areas investigated must be clearly placed in context. For example, an essay such as "How useful are neural networks in the evolution of machine learning?" must provide for the reader sufficient background information into both neural networks and machine learning.

The student must further explain why the topic and research question are worthy choices for an EE.

The methodology candidates will use to answer this question should be clearly described.

The essay must be well planned, making use of a variety of authoritative sources. These can be taken from the internet, literature and interviews with experts in the relevant field.

Many essays will involve an experimental or programming element, with the resulting data providing a valuable source. Students should avoid relying on small-scale surveys taken from fellow students.

Criterion B: Knowledge and understanding

(Strands: Context, Subject-specific terminology and concepts)

The student must demonstrate their own understanding of the topic into which the essay falls.

An essay that is comprised primarily of reworded source material will not provide this evidence. Instead the student should provide clarifications or simpler explanations of any technical information that is taken from their sources, always linking this information to the original research question.

The source material should be selected and incorporated in a way that illustrates the knowledge gained by the student in relation to the chosen topic.

The language must be at a technical level that is appropriate to computer science, but used in such a way that clearly demonstrates the student's own understanding. Students should beware of making their essays over-technical and should remember that the reader will not necessarily be an expert in the specific topic that is being addressed.

Criterion C: Critical thinking

(Strands: Research, Analysis and Discussion and evaluation)

The development of an argument that flows logically from one section to the next throughout the essay is only arrived at through sound planning.

The student must carefully select information that is directly relevant to the research question and resist any temptation to make use of too many sources.

The student needs to evaluate the research material not just in terms of what is relevant and necessary to support the main argument, but also in terms of the validity of the sources. This particularly applies to sources taken from the internet.

The student should attempt to draw out conclusions wherever appropriate and not just in the concluding section of the essay.

Any analysis of tables of results or of graphs should go further than simply translating the results into words but should look to explain the underlying reasons for the obtained results.

Final conclusions should do more than summarize the essay but should draw the various threads together in presenting a justified answer to the original research question. The student should indicate where future research could be undertaken in order to explore unanswered questions or in expanding the original scope of the essay.

Criterion D: Presentation

(Strands: Structure, Layout)

This criterion relates to the extent to which the essay conforms to accepted academic standards in relation to how research papers should be presented. It also relates to how well these elements support the reading, understanding and evaluation of the essay.

Students may provide a section and sub-section structure to their essays, with appropriate informative headings.

Use of charts, images and tables

Any charts, images or tables from literature sources included in the essay must be carefully selected and labelled. They should only be used if they are directly relevant to the research question, contribute towards the understanding of the argument and are of a good graphic quality.

Large tables of raw data collected by the student are best included in an appendix, where they should be carefully labelled. Tables of processed data should be designed to clearly display the information in the most appropriate form. Graphs or charts drawn from the analysed data should be selected to highlight only the most pertinent aspects related to the argument. Too many graphs, charts and tables will distract from the overall quality of the communication.

Only 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. Tables should enhance a written explanation, but not themselves include significant bodies of text. If they do, then these words must be included in the word count.

If an experimental method is long and complex, students may place the raw data in an appendix and include a summary of the methods in the body of the essay. Students who choose this option must be careful to ensure that the summary contains all elements that contribute to the quality of the investigation, since appendices are not an essential section of the EE and examiners are not required to read them. In other words, any important information that contributes to the evaluation of the method must be in the body of the essay and not the appendix. 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 in the main body of the essay. The remainder can be displayed in tabular or graphical form.

Any material that is not original must be carefully acknowledged, with specific attention paid to the acknowledgment and referencing of quotes and ideas. This acknowledgment and referencing is applicable to audio-visual material, text, graphs and data published in print and electronic sources. If the referencing does not meet the minimum standard as indicated in the guide (name of author, date of publication, title of source and page numbers as applicable), and is not consistently applied, work will be considered as a case of possible academic misconduct.

A bibliography is essential and has to be presented in a standard format. Title page, table of contents, page numbers, etc must contribute to the quality of presentation.

The essay must not exceed 4,000 words of narrative. Graphs, figures, calculations, diagrams, formulas and equations are not included in the word count. Students must be aware that examiners will not read beyond the 4,000-word limit, nor assess any material presented thereafter.

Criterion E: Engagement

(Strands: Reflections on planning and progress)

This criterion assesses the student's engagement with their research focus and the research process. It will be applied by the examiner at the end of the assessment of the essay, after considering the student's *Reflections on planning and progress Form* (RPPF).

Students are expected to provide reflections on the decision-making and planning process undertaken in completing the essay. Students must demonstrate how they arrived at a topic as well as the methods and approach used. This criterion assesses the extent to which a student has evidenced the rationale for decisions made throughout the planning process and the skills and understandings developed.

For example, students may reflect on:

- the approach and strategies they chose, and their relative success

- the *Approaches to learning* skills they have developed and their effect on the student as a learner
- how their conceptual understandings have developed or changed as a result of their research
- setbacks they faced in their research and how they overcame these
- questions that emerged as a result of their research
- what they would do differently if they were to undertake the research again.

Effective reflection highlights the journey the student has engaged in through the EE process. Students must show evidence of critical and reflective thinking that goes beyond simply describing the procedures that have been followed.

The reflections must provide the examiner with an insight into **student** thinking, creativity and originality within the research process. The **student** voice must be clearly present and demonstrate the learning that has taken place.

Design technology: Subject-specific guidance

See also: *Extended essay guide* and *Extended essay teacher support material*

Overview

An extended essay (EE) in design technology gives students an opportunity to undertake in-depth research into:

- the processes involved in the design and development of products or systems
- the impact of the products or systems' design on individuals and society.

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

Students are expected to use a range of methods for the collection of data and the essay should use both primary and secondary sources. Absolute reliance on textbooks and the internet is discouraged: no EE in design technology should be based exclusively on such sources.

Choice of topic

The topic must be concerned with issues relating directly to design technology. Where the topic may be approached from different viewpoints, students must examine it from a design technology perspective. Students are expected to be familiar with the design cycle, as set out in the *Design technology guide*.

Students are encouraged to select a topic that is appropriate to their interests and abilities and the resources available.

Essays may focus on systems design rather than a specific product, such as:

- investigating the benefits resulting from the introduction of end-of-pipe technology to reduce waste from the processing of iron ore
- investigating a cold chain for the distribution of heat-sensitive vaccines and antibiotics in a tropical climate
- evaluating the effectiveness of an automated manufacturing system for the mass customization of a particular product.

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

- artifacts that do not function effectively or seem wasteful of resources
- the needs of particular user groups such as the elderly, disabled or special needs;
- new technologies and how they might influence or converge with existing technologies.

Inappropriate topics

- A topic of a purely historical nature that merely documents the development of a product or technology

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- A topic that overlaps with the design project and uses the same literature, experiments, models or resources
- A topic that merely reviews a technological product or technological development

Examples of topics

These examples are just for guidance. Students must ensure their choice of topic is focused (left-hand column) rather than broad (right-hand column).

Focused topics	Broad topics
Investigating the limitations affecting maximum braking on a free-ride bicycle	Braking on a free-ride bicycle
Ergonomic design of kettles for use by those with arthritic wrist joints	Appliances for sufferers of arthritis
The impact on waste of dematerialization in food packaging	Waste dematerialization
Investigating intellectual property rights in an open-source world for product design	Open-source product design

Treatment of the topic

Students are expected to use a range of methods for the collection of data and the essay should use both primary and secondary sources. However, practical experimental work is not mandatory.

Use of primary sources

To promote their personal involvement, students should be encouraged to use locally available primary sources wherever possible. They can collect data from different sources using a variety of methods, and then analyse it using scientific and technological techniques.

However, they should only include in their essay data that is directly relevant to the chosen topic.

The inclusion of relevant graphical material will also significantly enhance the essay.

Practical and experimental work

As design technology is an experimental science, many students will wish to base their essay on practical or experimental work. However, this is not compulsory.

Practical activity may take the form of:

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

The topic should be treated at an appropriate level of study:

- broad enough to have wider social, political or organizational aspects
- specific enough to have 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. It is essential that students choose an issue that can be explored, and from which conclusions can be drawn, evaluated and recommendations made.

Examples of topics, research questions and suggested approaches

Once students have identified their topic and written their research question, they can decide how to research their answer. They may find it helpful to write a statement outlining their broad approach. These examples are for guidance only.

Topic	**The factors involved in designing an ergonomic drinking cup for children**
Research question	How have ergonomic factors been considered in the design of a drinking container for a pre-school child?
Approach	Primary data would be collected initially by observation of children's behaviour using existing drinking containers. Secondary ergonomic data would be used in the design, manufacture and evaluation of a prototype.

Topic	**The impact of new materials on the design of modern racing bicycles**
Research question	To what extent has the introduction of new materials improved the performance of modern racing bicycles?
Approach	The essay should give a clear explanation of performance and will use secondary data to identify the appropriate properties of materials. Primary data would be obtained from practical testing and comparison of similar components made from conventional and new materials.

Topic	**Transport infrastructure: the impact of an integrated cycling network**
Research question	How effective would an integrated cycling network be for encouraging individuals or families to make journeys by bicycle and reduce pollution and congestion?
Approach	Primary data would be collected from the chosen city by field observation and questionnaire. Secondary research from successful cities that have implemented bikeways, street furniture and

	trip-end facilities would be used to plan, model and evaluate improvements.

Topic	**Bedroom clock design for a nursery**
Research question	What is needed in a bedroom clock to encourage a child to have a restful sleep?
Approach	An investigation of the factors needed in a clock that provides light and comfort but encourages the child to sleep and know when it is time to wake up. Primary data would be provided by observation and interview. Secondary data from research about existing children's lights, toys and sleeping patterns.

Topic	**The impact of vertical wall gardens on the environment**
Research question	To what extent can plants be grown on vertical surfaces to improve our build environment and counteract rising temperatures in cities?
Approach	Researching secondary data would provide evidence of rising temperature in cities and the need for green spaces to improve the aesthetics and the living/working environment. An examination of existing systems for attaching and growing plants on vertical walls would lead to the development of a prototype and its evaluation.

An important note on "double-dipping"

Students must ensure that their EE does not duplicate other work they are submitting for the Diploma Programme.

The design technology EE and internal assessment

An EE in design technology is not an extension of the internal assessment (IA) task. Students must ensure that they understand the differences between the two.

- Students may not use the same materials that have been used in the IA as the focus for their EE.
- Any data that has been generated for use in the IA is inadmissible for use in the EE.

Supervisors play an important role in guiding students on these distinctions. Students risk their diploma if academic misconduct is detected.

Interpreting the EE assessment criteria

Criterion A: Focus and method

(Strands: Topic, Research question, Methodology)

The topic must be clearly indicated at the start of the essay. Students should specify the area of the research and the purpose and focus of the essay to clearly establish the research question.

It is usually appropriate to include the general background and context required to understand how the research question has arisen. Take, for example, the topic "Ergonomics and design for disability": students' explanation of this topic may refer to independent living, ergonomics and potential markets.

The research question must be expressed in the form of an actual question. This should be the precisely formulated, focused question that the research will attempt to answer. The research question for "Ergonomics and design for disability" could be "What are the requirements for a wheelchair for indoor mobility that is suitable for use in a shower?"

The research question should be:

- identified clearly
- justified
- set out prominently at the start of the essay.

Students need to show that they have:

- adequately researched the topic and consulted an appropriate range of sources
- planned their research well
- chosen methods and materials appropriate to the research question
- used the design cycle to address the research question.

This applies both to literature research and to practical data collection.Students must demonstrate that their chosen methods and materials are appropriate for addressing the research question. If students use practical methods to collect data, they must explain their rationale for doing this.

For experimental work, they must provide sufficient information on their methodology to allow the work to be repeated. If the method requires modelling or prototypes, these need to be manufactured to a sufficient standard to collect useful data and allow evaluation.

Students must also clearly demonstrate their understanding of the methods and equipment used. They should clearly reference any processes and give supporting evidence as to why they used them.

If students are investigating a well-documented or standard topic, they should attempt to look for a new approach or perspective to the issue.

Criterion B: Knowledge and understanding

(Strands: Context, Subject-specific terminology and concepts)

The source materials accessed should be clearly relevant and appropriate to the research question and to the field of design technology. There may be some research questions that require background from other disciplines. However, care should be taken when doing this as the essay will only be judged on its design technology content. For example, a student completing an EE on the topic area "New materials for designing aircraft fuselages" must apply their knowledge through the materials science and design area and not apply knowledge to the general increase in passenger air traffic resulting from cheaper air fares.

The essay should be effectively referenced and these references incorporated into the main body of the essay in a way that demonstrates the students' understanding. Literature cited should predominantly come from acknowledged design, technology and scientific sources. Students must demonstrate the ability to apply their selected sources and methods effectively and coherently in support of their argument.

Students 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 C: Critical thinking

(Strands: Research, Analysis and Discussion and evaluation)

The "research" refers to both literature sources and data collected by the students themselves. This research must be consistently relevant to the research question.

The student must comment reflectively on the quality, balance and quantity of their sources.

Students are expected to show an awareness of any limitations or uncertainties inherent in their approach. In particular, they should critically comment on the validity and reliability of the data and methods they use within the investigation.

The student is expected to present and analyse the data and sources appropriately. This analysis will often include:

- details of performance
- attribute analysis
- tables of processed data
- images and graphs.

If performance tests are used, they will yield quantitative data. The student should show understanding of why the test is included and what the results mean.

If graphs are used, they must be correctly selected and drawn to illustrate key elements of the analysis. They should only be included if they improve communication.

Photographic images, sketches and design drawings should be clearly identified and annotated.

Students must present and analyse their data in such a way that they support and clarify the argument leading to the conclusion.

Students must sustain 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 frequent reference to the research question.

An assessment of the extent to which the hypotheses are supported, or the design question is answered, by the data or information accessed should form part of the argument.

Students should keep their question(s) focused, to avoid a tendency to expand arguments, generalize discussion and lose focus and relevance.

The stated conclusion(s) must be a synthesis based on the data, information and evidence presented in the essay rather than a repetition of earlier arguments. Minor inconsistencies should be reported but should not prevent a valid conclusion.

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 research question. Errors and uncertainties arising from the methodology, equipment or techniques should be analysed and critically evaluated.

Designing solutions for real problems is a complex process, with factors that are difficult to control, and the design process may reveal unexpected outcomes. These should be pointed out, where appropriate, even if they were not part of the original plan.

The original research question may not be fully answered by the investigation. In these circumstances, the student should point out unresolved issues and make suggestions as to how these might be further investigated.

Criterion D: Presentation

(Strands: Structure, Layout)

This criterion relates to the extent to which the essay conforms to accepted academic standards in relation to how research papers should be presented. It also relates to how well these elements support the reading, understanding and evaluation of the essay.

Students may provide a section and sub-section structure to their essays, with appropriate informative headings.

Use of charts, images and tables

Any images, design drawings or tables from literature sources included in the essay must be carefully selected and labelled. They should only be used if they are directly relevant to the research question, contribute towards the understanding of the argument and are of a good graphic quality.

Large tables of raw data collected by the student are best included in an appendix, where they should be carefully labelled. Tables of processed data should be designed to clearly display the information in the most appropriate form. Graphs or charts drawn from the analysed data should be selected to highlight only the most pertinent aspects related to the argument. Too many graphs, charts and tables will distract from the overall quality of the communication.

Only 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. Tables should enhance a written explanation but not themselves include significant bodies of text. If they do, then these words must be included in the word count.

Design drawings should follow accepted conventions for layout and labelling.

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.

If a manufacturing or investigative method is long and complex, students may place the protocol in an appendix and just include a summary of the methods in the body of the essay. Students who choose this option must be careful to ensure that the summary contains all elements that contribute to the quality of the investigation, since appendices are not an essential section of the EE and examiners are not required to read them. In other words, any important information that contributes to the evaluation of the method must be in the body of the essay and not the appendix.

Any material that is not original must be carefully acknowledged, with specific attention paid to the acknowledgment and referencing of quotes and ideas. This acknowledgment and referencing is applicable to audio-visual material, text, graphs and data published in print and electronic sources. If the referencing does not meet the minimum standard as indicated in the guide (name of author, date of publication, title of source and page numbers as applicable), and is not consistently applied, work will be considered as a case of possible academic misconduct.

A bibliography is essential and has to be presented in a standard format. Title page, table of contents, page numbers, etc must contribute to the quality of presentation.

The essay must not exceed 4,000 words of narrative. Graphs, figures, calculations, diagrams, formulas and equations are not included in the word count. Students should be aware that examiners will not read beyond the 4,000-word limit, or assess any material presented thereafter.

Criterion E: Engagement

(Strands: Reflections on planning and progress)

This criterion assesses the student's engagement with their research focus and the research process. It will be applied by the examiner at the end of the assessment of the essay, after considering the student's *Reflections on planning and progress Form* (RPPF).

Students are expected to provide reflections on the decision-making and planning process undertaken in completing the essay. Students must demonstrate how they arrived at a topic as well as the methods and approach used. This criterion assesses the extent to which a student has evidenced the rationale for decisions made throughout the planning process and the skills and understandings developed.

For example, students may reflect on:

- the approach and strategies they chose, and their relative success
- the *Approaches to learning* skills they have developed and their effect on the student as a learner
- how their conceptual understandings have developed or changed as a result of their research
- setbacks they faced in their research and how they overcame these
- questions that emerged as a result of their research
- what they would do differently if they were to undertake the research again.

Effective reflection highlights the journey the student has engaged in through the EE process. Students must show evidence of critical and reflective thinking that goes beyond simply describing the procedures that have been followed.

The reflections must provide the examiner with an insight into **student** thinking, creativity and originality within the research process. The **student** voice must be clearly present and demonstrate the learning that has taken place.

Physics: Subject-specific guidance

See also: *Extended essay guide* and *Extended essay teacher support material*

Overview

An extended essay (EE) in physics should answer a research question in physics through focused, evidence-based argumentation. The evidence may be drawn from the student's personal experimentation and/or book- and internet-based research. Whichever method of research is adopted, the student must use the principles of physics.

The essay must go beyond simply informing the reader and involve the elements of personal and original thinking.

Assumptions about the essay's readers

It should be written for an international peer audience, familiar with the Diploma Programme physics course. The essay can therefore refer to any physics from the course without proof or explanation, eg Newton's laws.

However, material from outside the physics course should be fully explained and referenced where necessary. Students should explain it freshly as it applies to their research question, thereby convincing the reader that they have a genuine grasp of the physics involved.

Students should also explain any culture-specific matters they refer to in the essay in relation to physics, eg cricket or baseball.

Choice of topic

The topic should be a challenge for the student without being over-specialized. It should use the knowledge gained in the physics course to answer a research question that goes beyond the course content. The question must not be trivial in nature.

Inappropriate topics

Topics that require theory that is beyond the grasp of the student should be discouraged. Students should avoid broad or complex topics beyond the scope of the EE, such as investigations into quantum computers or black holes.

Research question

Having decided upon the area of investigation, the student should define a narrow and well-focused question. At this stage it is important to imagine the possible outcomes and conclusions. Doing so will help in the process of defining the question and choosing the methodology.

The selection of the topic and research question is a crucial step of the student's investigation. The guidance of the supervisor is vital in making sure that the student's choice is proper, relevant, realistic and promising.

Examples of topics

These examples are just for guidance. Students must ensure their choice of topic is focused (left-hand column) rather than broad (right-hand column).

Focused topics	Broad topics
The time taken for a single domino to fall depending upon its height and width	Falling dominoes
The frequency of sound produced by a violin depending on room temperature	Musical instruments
The rate of diffusion of different gases from an inflated balloon	Deflating balloons

Treatment of the topic

Physics essays usually have a title, which sums up the essence of the investigation. It is based on the student's identified topic area.

The research question further refines and defines the topic. It must be expressed as a question, not a statement. It must be expressed clearly and precisely, and appear early in the introduction of the essay and on the title page of the essay.

For example, a student may have noticed how it is difficult to spin an uncooked egg. After discussion with the supervisor, the student decides to fill a tin with liquids of different viscosities and roll them down an inclined plane. The title of the essay may be: "The effect of the viscosity of a body on its angular acceleration."

The research question, though, should be much more specific: "What is the relationship between the angular acceleration of a cylindrical can rolling down an inclined plane and the viscosity of its contents?"

Methods of approach

Students can choose to answer their research question with an essay based solely on theory or one based on data and theory.

If their essay is data based, students can choose to collect their own primary data or use secondary data that has already been collected elsewhere.

Students should consider the reliability of both primary and secondary sources at the start of the planning stage. Students must critically evaluate secondary data and the design of the experiment(s) by which they were collected with the same care that they would their own.

Importance of theory

Every EE in physics will involve applying relevant theory to the topic selected. Students must ground any experimental work in good background research from existing sources of information.

Before embarking on experimental work, students must first ensure that there is scope to explore and model the physics that underpins it. A purely empirical investigation that relates a number of variables in the absence of any theoretical foundation is never satisfactory.

For example, in an investigation relating the index of refraction of a salt solution to its concentration, the student must model the physics relating the index to the concentration.

Using secondary data

Students using data collected elsewhere can access all the assessment criteria and achieve the highest marks. For example, they can obtain astronomical data from databases and manipulate it in order to contribute to a research question that looks for the evidence of extrasolar planets.

Ideally, students will manipulate or analyse this secondary data in an original way. Essays that simply restate facts or data taken directly from the sources are of little value. The element of personal analysis and evaluation is extremely important.

Collecting primary data

Students should choose experiments that do not require extensive lengths of time for the construction of apparatus. Highly sophisticated instruments are rarely required and can hinder the understanding of a phenomenon. Some of the best EEs have been written by students investigating relatively simple phenomena using standard school apparatus, and this approach is to be encouraged.

Students must give a clear and concise description of their experimental procedure so that it can be repeated by others. This will normally involve clearly annotated scientific diagrams. Exhaustive lists of equipment and detailed descriptions of procedures should be avoided.

Theoretical essays

Theoretical essays offer students the challenge of exploring existing material in a new way. This may mean applying the theories and techniques of physics to an unconventional area.

Students may be tempted to incorporate mathematics or computer science, but they must ensure that the focus of the analysis and evaluation is on the discipline of physics.

Where computer programs are used and analysed from a physics perspective, they should be placed in the appendix. Each line of code of a program fragment included in the body of the essay will count as two words towards the word limit.

Examples of topics, research questions and suggested approaches

Once students have identified their topic and written their research question, they can decide how to research their answer. They may find it helpful to write a statement outlining their broad approach. These examples are for guidance only.

Topic	**The relationship between the dimensions of an exhaust pipe and the sound it emits**
Research question	What is the relationship between the length of an exhaust pipe and the frequency of the sound it emits?
Approach	A clear opportunity for theory here and this can be supported by a student-designed simulation. Conducting the experiments may be difficult but can be achieved by analysing the recorded sound.

Topic	**The time taken to reach terminal velocity**
Research question	How does the time taken to reach terminal velocity depend upon the viscosity of the fluid it is falling through?
Approach	This is a good opportunity for experimentation using a viscous liquid. Quantitatively measuring viscosity and changing the viscosity without changing other variables will provide additional challenges. Mathematically modelling using a spreadsheet simulation will help to determine the expected answer.

Topic	**The temperature dependence of the sound of flowing water**
Research question	How does the frequency spectrum of the sound of running water depend upon its temperature?
Approach	This would be a very doable challenge. The student would be expected to do the experiment and also to find some way of accounting for and modelling the change of frequency observed.

An important note on “double-dipping”

Students must ensure that their EE does not duplicate other work they are submitting for the Diploma Programme. For example, the same experiments cannot be used for the EE and the internal assessment or other practical work carried out during the course.

The physics EE and internal assessment

In particular, an EE in physics is not an extension of the internal assessment (IA) task. Students must ensure that they understand the differences between the two.

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

- The EE explicitly assesses the students' ability to analyse and evaluate scientific arguments.

Supervisors play an important role in guiding students on these distinctions. Students risk their diploma if academic misconduct is detected.

Interpreting the EE assessment criteria

Criterion A: Focus and method

(Strands: Topic, Research question, Methodology)

The research question must be expressed in the form of a question. It should be the precisely formulated question that the research will attempt to answer.

The title of the essay should:

- reflect the essence of the investigation
- by itself clearly describe the topic or aim of the essay
- not be too long
- be clarified, if necessary, early in the essay
- be different from the research question
- usually be presented as a statement.

Early in the essay the student should also outline the area of the research and the purpose and focus of the essay to clearly establish the context of the research question. It is usually appropriate to identify the physics principles relevant to the research question.

For example, a brief description of the motion of a cylindrical magnet falling inside a copper pipe will include the application of the laws of electromagnetic induction as well as Newton's laws of motion.

For this, the student should write a qualitative description of the forces acting on the falling magnet, and their possible variations along its path. Their description could usefully include diagram(s) and perhaps a sketch graph.

A formal development of the theory relevant to the research question follows later on in the essay.

The research question must be centred on physics as a science. It must not focus on peripheral issues, such as the history of physics or social implications of discoveries in physics.

The way in which students plan their investigation will depend on the approach they choose. They must demonstrate that their chosen methods and materials do address the research question.

If the essay is data based, students' planning should include:

- the relevant physics theory based on reliable and appropriate literature research
- an appreciation of the uncertainties and limitations of techniques and apparatus for data collection.

Students must explain clearly the rationale for choosing their particular experimental methods. However, preliminary work should not be part of the core of the essay.

If their study is based on the research of secondary data, students need to ensure that the selection of sources is sufficiently wide and reliable.

Criterion B: Knowledge and understanding

(Strands: Context, Subject-specific terminology and concepts)

The essay must show clear evidence of understanding of the physics focused on in the essay.

It is not required to explain fundamental laws of physics or general knowledge that are applied in the investigation.

Sources relevant to the research question should be effectively referenced and incorporated into the body of the essay in a way that demonstrates the student's understanding.

A theoretical dimension must be part of any empirical investigation. For this purpose, students should develop their own model or use material from acknowledged sources in a relevant and appropriate way.

Students must demonstrate the ability to apply their method and selected sources effectively in support of their argument.

The relative weight given to literature sources will depend on the approach chosen by the student.

Students should make sure definitions are clearly stated if the material being discussed lies outside the IB physics course. Students must make sure that all steps in their reasoning are clearly understood. Students need to demonstrate that they fully understand what they are doing.

Physics terminology relevant to the research question should be used appropriately and explained to show understanding.

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 prior proper analysis.

Any symbols used must be clearly and fully identified in the context of the situation and must be applied consistently throughout the essay. 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.

Appropriate and precise physics terminology includes units.

Only SI standards must be applied to numerical expressions associated with uncertainty and units.

The use of annotated diagrams for set-up, theory and analysis is an efficient and highly useful tool of communication in physics. It should be part of the student’s physics language and properly integrated.

Criterion C: Critical thinking

(Strands: Research, Analysis and Discussion and evaluation)

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The research sources and collected data in an investigation must be essentially and consistently relevant to, and focused on, the research question.

Students should use mathematics as a tool without it replacing the relevant physics or becoming the goal itself. For example, in data analysis the student should show an understanding of the statistics and mathematical relationships produced automatically by software programs and pay attention to uncertainties and significant digits of quoted fit parameters.

Any automatic software curve-fitting and parameter estimation, for example polynomials of degree *n*, must be justified within a meaningful physics model or theory.

Statistics should not override physics. A purely empirical approach will not achieve the highest band of this criterion.

Students should be able to manipulate properly significant digits and uncertainties, especially uncertainty in the mean and in graphs. They should also understand propagation of errors, where appropriate.

Students need to demonstrate understanding of the intrinsic limitations of an investigation, and their implications for the conclusions reached. They should demonstrate how a given proposed limitation impacts the final results and conclusion, such as where experimental results are compared with standard values.

Students must evaluate the validity and reliability of data and information from sources. They should comment on the quality, balance and quantity of the sources and data used.

Throughout the essay, students should present a clear, coherent and focused argument based on the research question. Personal views should not simply be stated but must 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.

The level of insight and depth of understanding 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.

A well-organized and well-presented essay will enhance the clarity of an argument.

The conclusion(s) should be consistent and develop clearly out of the argument. It should not introduce new evidence or extraneous matter. It should be personal to the student and present a new synthesis in light of the discussion.

The analysis and conclusion(s) should reveal the impact on the investigation of the limitations inherent in theoretical models, in the experimental data collected and in the experimental design. When the original research question is not fully answered, students may briefly suggest how these unanswered aspects might be further investigated.

Criterion D: Presentation

(Strands: Structure, Layout)

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. It also relates to how well these elements support the reading, understanding and evaluation of the essay.

Students must provide a section and sub-section structure to their essays, with appropriate informative headings.

In experimental investigations, a scientific annotated diagram can efficiently introduce key elements of the set-up. Only relevant details of key equipment should be given and exhaustive lists of equipment avoided. A summary of the essential procedural steps in a scientific paper style is expected rather than a cookbook recipe approach.

Any graphs, figures or tables generated by students or taken from literature sources included in the essay must be carefully selected and labelled. They should only be used if they are directly relevant to the research question, contribute towards the understanding of the argument and are of a good graphic quality. Clarity in tables and graphs is important and students should not use unnecessary over-formatting that may detract from communication.

A representative sample of raw data collected in large amounts by the student must be included in the core of the essay in a data table including uncertainties and units. The rest of the raw data should be in the appendix where they should be carefully labelled. Tables of processed data in the core of the essay should be designed to clearly display the information in the most appropriate form.

Graphs drawn from the analysed data should be selected to highlight only the most pertinent aspects related to the argument. Too many graphs and data tables will detract from the overall quality of the communication and interrupt the development of the argument.

Only processed data, graphs, diagrams or images that are central to the argument of the essay should be included in the body of the essay, as close as possible to its first reference in the text.

Data tables should enhance a written explanation; they should not themselves include significant bodies of text. If they do, then these words will be included in the word count.

The use of a summary table and the combination of multiple graphs into one graph (family of curves) will avoid unnecessary repetitions. Equations referred to in the text should be numbered.

Any material that is not original must be carefully acknowledged, with specific attention paid to the acknowledgment and referencing of quotes and ideas. This acknowledgment and referencing is applicable to audio-visual material, text, graphs and data published in print and electronic sources. If the referencing does not meet the minimum standard as indicated in the guide (name of author, date of publication, title of source and page numbers as applicable), and is not consistently applied, work will be considered as a case of possible academic misconduct.

A bibliography is essential and has to be presented in a standard format. Title page, table of contents, page numbers, etc must contribute to the quality of presentation.

The essay must not exceed 4,000 words of narrative. Students should be aware that examiners will not read beyond the 4,000-word limit, nor assess any material presented thereafter.

Criterion E: Engagement

(Strands: Reflections on planning and progress)

This criterion assesses the student's engagement with their research focus and the research process. It will be applied by the examiner at the end of the assessment of the essay, after considering the student's *Reflections on planning and progress Form* (RPPF).

Students are expected to provide reflections on the decision-making and planning process undertaken in completing the essay. Students must demonstrate how they arrived at a topic as well as the methods and approach used. This criterion assesses the extent to which a student has evidenced the rationale for decisions made throughout the planning process and the skills and understandings developed.

For example, students may reflect on:

- the approach and strategies they chose, and their relative success
- the *Approaches to learning* skills they have developed and their effect on the student as a learner
- how their conceptual understandings have developed or changed as a result of their research
- setbacks they faced in their research and how they overcame these
- questions that emerged as a result of their research
- what they would do differently if they were to undertake the research again.

Effective reflection highlights the journey the student has engaged in through the EE process. Students must show evidence of critical and reflective thinking that goes beyond simply describing the procedures that have been followed.

The reflections must provide the examiner with an insight into **student** thinking, creativity and originality within the research process. The **student** voice must be clearly present and demonstrate the learning that has taken place.

Sports, exercise and health science: Subject-specific guidance

See also: *Extended essay guide* and *Extended essay teacher support material*

Overview

An extended essay (EE) in sports, exercise and health science (SEHS) provides students with an opportunity to apply the wide range of skills in the field of sports, exercise and health science to research into a topic of personal interest.

SEHS covers a wide range of topics from human physiology to principles of biomechanics and the nature of skill acquisition. It is an applied science course so its EE investigates a sporting or health-related issue using the principles of science.

Choice of topic

The EE must have a clear SEHS emphasis. This incorporates knowledge from a variety of fields, in particular biology, chemistry, physics and psychology, but the essay must focus on human health and performance in relation to sport and exercise.

The topic must allow for an approach that relates specifically to:

- human performance in sport or exercise, or
- an understanding of the role of exercise or nutrition in improving or maintaining health and managing disease.

For example, an essay that deals with the physiological responses to exercise should emphasize the relationship between the exercise and relevant bodily responses rather than the biological understanding of anatomy.

Inappropriate topics

Some topics may be unsuitable because of ethical or safety issues arising from the means of investigation.

The following are inappropriate:

- experiments in which the student is likely to inflict pain on, or cause undue stress to, subjects or compromise their health
- experiments involving body fluids (as there is a risk of the transmission of blood-borne pathogens)
- studies that require access to, or publication of, confidential medical information.

The investigation must comply with the IB *Guidelines for the use of animals in IB World Schools*.

An experiment involving human subjects must be carried out with their, or their guardian's, written permission.

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It is recommended that all test subjects complete a PAR-Q or similar readiness questionnaire before taking part in rigorous exercise, to ensure that they are not likely to be subject to activities that could affect their well-being.

Other topics may be unsuitable because the outcome is already well known and documented in standard textbooks.

Examples of topics

These examples are just for guidance. Students must ensure their choice of topic is focused (left-hand column) rather than broad (right-hand column).

Focused topics	Broad topics
The effect of energy drinks on recovery rates in middle-distance runners	Energy drinks and exercise
A study into the effect of pre-performance routines on basketball free throws	Psychology and performance
A study into the effect of fluid intake on the thermoregulation in high school female soccer players	Thermoregulation in soccer players
A study into the most effective angle of release for javelin throwing	The mechanics of throwing
A study into the correlation between the body fat readings obtained by using callipers and a bioelectric impedance monitor	Body composition of athletes

Treatment of the topic

Primary and secondary data

Students can base their essay on primary data collected through:

- experimentation in the laboratory or in the field
- questionnaires
- some other appropriate SEHS approach.

Alternatively, essays may be based on secondary data or information obtained from literature or databases. If students choose secondary data, they must manipulate or analyse it in an original way to answer their research question.

Students can also use secondary data in conjunction with primary data that they have collected themselves.

Whichever approach is chosen, students must ensure that they have access to sufficient data or information to research and analyse their topic effectively.

Essays that simply restate facts or data taken directly from the sources are of little value.

Essays that involve practical work carried out 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 research approach and methodology were decided.

Supervision

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 the basic equipment available at 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 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 mentor must be accompanied by a covering letter outlining the nature and level of guidance provided.

If this is the case, students must also have a school supervisor to guide them through the process and to undertake their reflection sessions with them.

Analysis and argument

Generating and presenting data should not be an end in itself; analysis using appropriate 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 students should point out the significance of any graphs, tables or diagrams.

Students should ensure that the main body of the essay is well structured and has an obvious logical progression. They can use numbered and headed paragraphs to impose a clear structure. Their evaluation should show they understand the results and their significance in the context of wider academic reading on the topic.

Depending on the topic chosen, students should allow room for discussion of conflicting evidence. The ability to analyse from different perspectives is very important in these circumstances.

It is not always appropriate to include graphs and tables for analysis, but every effort should be made to provide clear pathways to the outcome of any experimentation.

Students must be encouraged to undertake a critical evaluation of the work they have done.

In their 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 students' research has included experimentation, limitations should be considered, such as:

- the problem of repeatability and control when using human subjects
- the difficulties of generalizing from research based on small group samples
- elements that are difficult to control, such as weather conditions, prior health of the subjects or effort applied during testing.

Examples of topics, research questions and suggested approaches

Once students have identified their topic and written their research question, they can decide how to research their answer. They may find it helpful to write a statement outlining their broad approach. These examples are for guidance only.

Topic	**The effect of energy drinks on recovery rates**
Research question	To what extent do energy drinks affect recovery rates in middle-distance runners?
Approach	Students carry out an investigation into how different energy drinks affect the recovery rates of a group of middle-distance runners. Performances of athletes in a given repeated training activity are recorded, with one group being given energy drinks between repeats, and another a suitable control. Secondary data can also be found through literature research and can supplement the findings from the experiment.

Topic	**Angles of release for thrown objects**
Research question	What is the optimum angle of release for a male javelin thrower?
Approach	Students can carry out an investigation into the optimum angle of release of a javelin for a male athlete. Repeated measurements of release angle would best be carried out using motion analysis equipment to ensure accuracy. The use of secondary data in this instance is plentiful and should be comprehensively included and debated as a complement to the primary data collected by the student.

Topic	**The effect of plyometric training**
Research question	Will an eight-week short-term plyometric training programme have a beneficial effect on the explosive ability of volleyball players?

Approach	A digital jump mat for testing the standing high jump power of 10 high school volleyball players is used as a measure of explosive ability. Five of these volleyball players (selected at random) then carry out an eight-week training programme that includes one high-intensity plyometric training session. The remaining five athletes carry out the same eight-week training session but do not include the plyometric training session. The pre- and post-training data from both groups is compared.

An important note on "double-dipping"

Students must ensure that their EE does not duplicate other work they are submitting for the Diploma Programme.

The sports, exercise and health science EE and internal assessment

In particular, an EE in SEHS is not an extension of the internal assessment (IA) task. Students must ensure that they understand the differences between the two.

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

Supervisors play an important role in guiding students on these distinctions. Students risk their diploma if academic misconduct is detected.

Interpreting the EE assessment criteria

Criterion A: Focus and method

(Strands: Topic, Research question, Methodology)

The topic and the research question must be clearly indicated at the start of the essay.

To establish the context of the research question, students should include:

- the area of the research
- the purpose and focus of the essay
- the general background SEHS theory required to understand the context.

For example, an essay on "Factors affecting performance in endurance runners" may refer to ergogenic aids, hydration and thermoregulation.

The topic must be expressed in the form of a question. It should be a precisely formulated question that the research will attempt to answer. For example, the research question based on "Factors affecting performance in endurance runners" could be "What is the effect on recovery rates of athletes who drink energy fluids that contain different concentrations of maltodextrin carbohydrate?"

The student needs to demonstrate within the essay that the research has been well planned. They should show that they have researched the topic and selected an appropriate approach to the study of it.

While SEHS does not have a unique approach, it uses the principles of science applied in a specific context. This could be sport, exercise or health. This applies both to literature research and to primary data collection.

Students must demonstrate that their chosen methods and materials are appropriate for addressing the research question. The rationale for choosing practical methods should be clearly explained.

For experimental work, sufficient information on the methodology should be provided to allow the work to be repeated.

If students have undertaken an investigation that requires fieldwork, they must clearly demonstrate their understanding of the methods and equipment used.

All standardized tests should be clearly referenced and supporting evidence given as to why these tests were used.

If students are investigating a well-documented or standard topic, they should attempt to look for a new approach or perspective to the issue.

Any topic undertaken must show an appreciation and understanding of ethical considerations, and must not violate the ethical standards of the IB sciences.

Criterion B: Knowledge and understanding

(Strands: Context, Subject-specific terminology and concepts)

The source materials accessed should be clearly relevant and appropriate to the research question and to the field of SEHS.

There may be some research questions that require background from other disciplines. However, care should be taken when doing this as the essay will only be judged on its SEHS content. For example, a student writing on the topic "Diabetes and physical activity" must write about diabetes in the context of physical activity rather that its general health or medical aspects.

Work that is not the student's own should be effectively referenced and used in a way that demonstrates the students' understanding and relevance of the work cited. The literature used should predominantly come from acknowledged SEHS or scientific sources. Students must demonstrate the ability to apply their selected information and methods effectively in support of their argument.

Students 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.

Students should explain any technical terms they use and demonstrate an understanding of them by using them appropriately within the text.

The student must try to maintain a consistent linguistic style throughout the essay.

Criterion C: Critical thinking

(Strands: Research, Analysis and Discussion and evaluation)

The "research" refers to both literature sources and data collected by the students themselves. This research must be consistently relevant to the research question. The student must comment on the quality, balance and quantity of their sources.

Students are expected to show an awareness of any limitations or uncertainties inherent in their approach. In particular, they should comment critically on the validity and reliability of their data relative to their research question within the investigation.

The student is expected to present and analyse the data and sources appropriately. This analysis will often include:

- mathematical transformations
- statistical analysis
- tables of processed data
- graphs.

If the data are analysed statistically, the student must clearly show understanding of why that particular test was chosen and what the results mean.

If graphs are used, they must be correctly selected and drawn to illustrate key elements of the analysis. They should only be included if they improve communication.

Students must make a special effort to maintain a reasoned, logical argument that focuses on the research question. Essays that attempt to manipulate 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.

An assessment of the extent to which the research question is answered, or the conclusions formed are supported by the data or information accessed, should form part of the argument.

Particular care should be taken when dealing with essays that are focused on the psychology of sport. If questions are not tightly focused, there may be a tendency to investigate variables not closely related to the research question.

The stated conclusion(s) must be based on the data, information and 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. 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 or techniques should be analysed and critically evaluated. Special care should be taken when using data from field research in SEHS as some variables cannot be controlled and this may reveal unexpected outcomes. These should be pointed out, where appropriate, even if they were not part of the original plan.

It is not unusual for the original research question to be not 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 D: Presentation

(Strands: Structure, Layout)

This criterion relates to the extent to which the essay conforms to accepted academic standards in relation to how research papers should be presented. It also relates to how well these elements support the reading, understanding and evaluation of the essay.

Students must provide a section and sub-section structure to their essays, with appropriate informative headings.

Any charts, images or tables from literature sources included in the essay must be carefully selected and labelled. They should only be used if they are directly relevant to the research question, contribute towards the understanding of the argument and are of a good graphic quality.

Large tables of raw data collected by the student are best included in an appendix, where they should be carefully labelled. Tables of processed data should be designed to clearly display the information in the most appropriate form. Graphs or charts drawn from the analysed data should be selected to highlight only the most pertinent aspects related to the argument. Too many graphs, charts and tables will distract from the overall quality of the communication.

Only 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. Tables should enhance a written explanation but not themselves include significant bodies of text. If they do, then these words will be 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.

If an experimental method is long and complex, students may place the protocol in an appendix and just include a summary of the methods in the body of the essay. Students who choose this option must be careful to ensure that the summary contains all elements that contribute to the quality of the investigation, since appendices are not an essential section of the EE and examiners are not required to read them. In other words, any important information that contributes to the evaluation of the method must be in the body of the essay and not the appendix.

Any material that is not based on the student's own data must be carefully acknowledged, with specific attention paid to the acknowledgment and referencing of quotes and ideas. This acknowledgment and referencing is applicable to audio-visual material, text, graphs and data published in print and electronic sources. If the referencing does not meet the minimum standard as indicated in the guide (name of author, date of publication, title of source and page numbers as applicable), and is not consistently applied, work will be considered as a case of possible academic misconduct.

A bibliography is essential and has to be presented in a standard format. Title page, table of contents, page numbers, etc must contribute to the quality of presentation.

The essay must not exceed 4,000 words of narrative. Graphs, figures, calculations, diagrams, formulas and equations are not included in the word count. Students should be aware that examiners will not read beyond the 4,000-word limit, or assess any material presented past this.

Criterion E: Engagement

(Strands: Reflections on planning and progress)

This criterion assesses the student's engagement with their research focus and the research process. It will be applied by the examiner at the end of the assessment of the essay, after considering the student's *Reflections on planning and progress Form* (RPPF).

Students are expected to provide reflections on the decision-making and planning process undertaken in completing the essay. Students must demonstrate how they arrived at a topic as well as the methods and approach used. This criterion assesses the extent to which a student has evidenced the rationale for decisions made throughout the planning process and the skills and understandings developed.

For example, students may reflect on:

- the approach and strategies they chose, and their relative success
- the *Approaches to learning* skills they have developed and their effect on the student as a learner
- how their conceptual understandings have developed or changed as a result of their research
- setbacks they faced in their research and how they overcame these
- questions that emerged as a result of their research
- what they would do differently if they were to undertake the research again.

Effective reflection highlights the journey the student has engaged in through the EE process. Students must show evidence of critical and reflective thinking that goes beyond simply describing the procedures that have been followed.

The reflections must provide the examiner with an insight into **student** thinking, creativity and originality within the research process. The **student** voice must be clearly present and demonstrate the learning that has taken place.

Mathematics: Subject-specific guidance

See also: *Extended essay guide* and *Extended essay teacher support material*

For a general introduction to undertaking an extended essay in mathematics, see Mathematics: An introduction.

Overview

An extended essay (EE) in mathematics is intended for students who are writing on any topic that has a mathematical focus and it need not be confined to the theory of mathematics itself.

Essays in this group are divided into six categories:

- the applicability of mathematics to solve both real and abstract problems
- the beauty of mathematics—eg geometry or fractal theory
- the elegance of mathematics in the proving of theorems—eg number theory
- the history of mathematics: the origin and subsequent development of a branch of mathematics over a period of time, measured in tens, hundreds or thousands of years
- the effect of technology on mathematics:
    - in forging links between different branches of mathematics,
    - or in bringing about a new branch of mathematics, or causing a particular branch to flourish.

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 EE 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 the requirements of the EE.

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.

Examples of topics

These examples are just for guidance. Students must ensure their choice of topic is focused (left-hand column) rather than broad (right-hand column).

Focused topics	Broad topics
Prime numbers in cryptography	Prime numbers
The Hausdorff dimension of fractal sets	Fractals
Continued fractions in birth–death processes	Continued fractions
The proof of the law of quadratic reciprocity	CF Gauss: the mathematician
Using graph theory to minimize cost	Graph theory

Treatment of the topic

Whatever the title of the EE, students must apply good mathematical practice that is relevant to the chosen topic, including:

- data 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.

Research methods

Students must be advised that mathematical research is a long-term and open-ended exploration of a set of related mathematical problems that are based on personal observations. The answers to these problems connect to and build upon each other over time.

Students' research should be guided by analysis of primary and secondary sources.

A primary source for research in mathematics involves:

- data-gathering
- visualization
- abstraction
- conjecturing
- proof.

A secondary source of research refers to a comprehensive review of scholarly work, including books, journal articles or essays in an edited collection.

A literature review for mathematics might not be as extensive as in other subjects, but students are expected to demonstrate their knowledge and understanding of the mathematics they are using in the context of the broader discipline, for example how the mathematics they are using has been applied before, or in a different area to the one they are investigating.

Writing the essay

Throughout the EE students should communicate mathematically:

- describing their way of thinking
- writing definitions and conjectures
- using symbols, theorems, graphs and diagrams
- justifying their conclusions.

There must be sufficient explanation and commentary throughout the essay to ensure that the reader does not lose sight of its purpose 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.

Examples of topics, research questions and suggested approaches

Once students have identified their topic and written their research question, they can decide how to research their answer. They may find it helpful to write a statement outlining their broad approach. These examples are for guidance only.

Topic	**The geometry of navigation**
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.

Topic	**Square–triangular numbers and Pell's equation**
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.

Topic	**The exponential function and the measurement of age and growth**
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 phenomenon. Show how it is applicable in mathematical models of other real situations.

Topic	**Approximation of irrational numbers by rational numbers**
Research question	How well can π, 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.

Topic	**Archimedes' calculation of areas**
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 π. Continue with a description of his method of discovery for calculating the area of a parabola.

An important note on "double-dipping"

Students must ensure that their EE does not duplicate other work they are submitting for the Diploma Programme. For example, students are not permitted to repeat any of the mathematics in their IA in their EE, or vice versa.

The mathematics EE and internal assessment

An EE in mathematics is not an extension of the internal assessment (IA) task. Students must ensure that they understand the differences between the two.

- The EE is a more substantial piece of work that requires formal research.
- The IA is an exploration of an idea in mathematics.

It is not appropriate for a student to choose the same topic for an EE as the IA. There would be too much danger of duplication and it must therefore be discouraged.

Supervisors play an important role in guiding students on these distinctions. Students risk their diploma if academic misconduct is detected.

Interpreting the EE assessment criteria

Criterion A: Focus and method

(Strands: Topic, Research question, Methodology)

In mathematics, the title of the essay must be in the form of a question, which can by itself clearly describe the topic and/or aim of the essay. It must not be too long and any necessary clarification of it, together with a clear indication of the mathematical areas and the techniques, should be provided early in the essay.

For example, "Methods for approximating *Π* throughout history. In this essay I will describe methods of approximating *Π* from the work of Archimedes to the use of infinite series, infinite products and continued fractions in subsequent periods." In other words, the focus and purpose of the essay must be made clear to the reader and appropriately related to the knowledge and understanding in context. This is clearly demonstrated when the research question indicates the mathematical techniques to be applied.

The sources consulted must be sufficient and each must contribute to the research focus of the essay.

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The essay must be set out in sequential form in the manner of good mathematical writing, that is each section following on from and connected to the previous one.

A sharply written clear focus and research question can help the student ensure the essay remains within 4,000 words.

Criterion B: Knowledge and understanding

(Strands: Context, Subject-specific terminology and concepts)

The essay must show clear evidence of understanding of the mathematics that is relevant to the focus of the essay. Students will not be rewarded for attempting to exhibit a wider knowledge of mathematics that is not essential to exploring the research question.

For example, in an essay on fractals, students must describe the mathematical concepts that underlie them without resorting to advanced theorems and results in analysis.

Students can demonstrate their understanding by:

- giving accurate and complete explanations of subject-specific terminology
- making knowledgeable comments on source material
- using source material in a relevant and appropriate way.

Students should ensure that the essay's content is accessible to readers with a strong interest in the subject as well as to those with an advanced knowledge of it.

Students need to clearly communicate and explain their mathematics. They must not just talk about it but actually do the mathematics, and must show all steps in mathematical reasoning to make it clear that they understand it.

Students must make sure definitions are fully explained. If a theorem is used whose proof is too difficult, it should at least be explained by a clear example. Throughout, students need to demonstrate that they fully understand what they are doing.

Criterion C: Critical thinking

(Strands: Research, Analysis and Discussion and evaluation)

Students should be aware of the particular demands of critical thinking in mathematics.

At each opportunity in the essay, students must demonstrate their abilities in:

- correct deductive reasoning and argument
- establishing hypotheses
- formulating mathematical models.

For example, in the use of statistics to establish a hypothesis, students must collect the correct data, then display summary data and graphs, so that they choose, apply and interpret correctly the appropriate test or tests.

Students' discussion and evaluation of their results should be concise.

It is important that students do the mathematics rather than merely describe it. They must show the steps in the algebra to demonstrate that they really understand what is going on. If they take any element from a source, they must cite that source.

Students should prove conjectures that can readily be proved. The essay must not just quote results; there must be evidence of the student doing mathematics.

Criterion D: Presentation

(Strands: Structure, Layout)

This criterion relates to the extent to which the essay conforms to accepted academic standards in relation to how research papers should be presented. It also relates to how well these elements support the reading, understanding and evaluation of the essay.

Students must provide a section and sub-section structure to their essays, with appropriate informative headings. Students should aim to demonstrate their mastery of appropriate concepts and an ability to present these in an effective way using mathematical means. Concise, elegant mathematics supported by graphs, diagrams and important proofs that do not interrupt the development of the essay are encouraged.

Use of charts, images and tables

Diagrams and pictures should be in the text, immediately close to an explanation of them. Small data tables can be included in the body of the essay but larger ones should appear as an appendix, with means, standard deviations, correlation coefficients etc given in the text.

Students should include computer routines only if they are absolutely necessary for the understanding of the essay. These must always appear as an appendix.

Any material that is not original must be carefully acknowledged, with specific attention paid to the acknowledgment and referencing of quotes and ideas. This acknowledgment and referencing is applicable to audio-visual material, text, graphs and data published in print and electronic sources. If the referencing does not meet the minimum standard as indicated in the guide (name of author, date of publication, title of source and page numbers as applicable), and is not consistently applied, work will be considered as a case of possible academic misconduct.

A bibliography is essential and has to be presented in a standard format. Title page, table of contents, page numbers, etc must contribute to the quality of presentation.

Word count is rarely an important factor in a good mathematics EE. Since equations and formulas (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. Students should be aware that examiners will not read beyond the 4,000-word limit, or assess any material presented past this.

There is no mandatory minimum length for an essay in mathematics, and credit will be given for organizing the content in an efficient and 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. Students should use an appendix as appropriate (eg for large amounts of raw data or for computer routines). However, any mathematics that is essential to the understanding of the essay must appear in the main body of the essay.

Criterion E: Engagement

(Strands: Reflections on planning and progress)

This criterion assesses the student's engagement with their research focus and the research process. It will be applied by the examiner at the end of the assessment of the essay, after considering the student's *Reflections on planning and progress Form* (RPPF).

Students are expected to provide reflections on the decision-making and planning process undertaken in completing the essay. Students must demonstrate how they arrived at a topic as well as the methods and approach used. This criterion assesses the extent to which a student has evidenced the rationale for decisions made throughout the planning process and the skills and understandings developed.

For example, students may reflect on:

- the approach and strategies they chose, and their relative success
- the *Approaches to learning* skills they have developed and their effect on the student as a learner
- how their conceptual understandings have developed or changed as a result of their research
- setbacks they faced in their research and how they overcame these
- questions that emerged as a result of their research
- what they would do differently if they were to undertake the research again.

Effective reflection highlights the journey the student has engaged in through the EE process. Students must show evidence of critical and reflective thinking that goes beyond simply describing the procedures that have been followed.

The reflections must provide the examiner with an insight into **student** thinking, creativity and originality within the research process. The **student** voice must be clearly present and demonstrate the learning that has taken place.

The arts: Subject-specific guidance

An extended essay (EE) in the arts gives students an opportunity to undertake an in-depth investigation into a topic within an arts subject of particular interest to them.

The EE must demonstrate in-depth understanding of the subject matter studied. This should be shown in the form of:

- a coherent analysis and interpretation of their chosen area in relation to a posed research question
- the testing and validation of the research and consideration of its effect on the practice of the investigated area of the arts
- development and exploration in a disciplined and imaginative way of an area of study specifically appropriate to the curriculum area chosen
- a link to a practical dimension.

The research outcome should always include a link with a practical dimension. Where relevant and possible, students may wish to consult practitioners and professionals, such as performers, directors, researchers, writers, designers, painters, sculptors, composers or critics; or they may wish to visit theatres, galleries, museums and arts centres.

For a longer general overview of an arts-related EE, see The arts: An introduction

Dance: Subject-specific guidance

See also: *Extended essay guide* and *Extended essay teacher support material*

Overview

An extended essay (EE) in dance provides students with an opportunity to study in depth a topic in dance of particular interest to them.

The essay's focus must be on dance as expressive movement with intent, purpose and form that communicates through the body and gesture of the dancer.

Students should aim for a coherent written analysis and interpretation of one or more dances or dance styles and traditions in relation to their research question. The essay should engage students in critical thinking. They are required to present logically a personal point of view and develop a reasoned argument.

Students do not have to be enrolled in the Diploma Programme dance course to write an EE in dance. However, they must be familiar with the different aspects and requirements of the course.

Choice of topic

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.

Students can choose a particular dance, style or tradition as their topic. They should consider the dance, style or tradition itself and also the role it plays within its cultural context, in terms of:

- historical and current practice
- social, religious, political and/or intellectual significance.

Students must focus at least part of their research on a present-day issue so that they have access to some primary sources of information.

Sources of ideas

This list is not exhaustive but is intended for guidance only.

- The Diploma Programme dance course
- Performances and/or different interpretations of (a particular) dance
- Dance cultures and traditions students have encountered within their own experience
- 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 or concerns about the field of dance

Examples of topics

These examples are also just for guidance. Students must ensure their choice of topic is focused (left-hand column) rather than broad (right-hand column).

Focused topics	Broad topics
The influence of elements of conduct and mannerism of the 17th century imperial court on Japanese Mai style dance	Traditional Japanese dance styles
An investigation of the importance of customs and ritual in Alaskan native dances through an analysis of selected dances of the Yup'ik tribe	Native American dance
A study of the merge of Mandé performance traditions with ballet styles to develop Fodéba Keïta's dance choreographies for *Les Ballets Africains*	West African dance styles
The impact of the work of Nederlands Dans Theater on the European modern ballet style	Modern ballet styles

Treatment of the topic

The structure of the essay is important to its success. Students cannot fulfill its requirements by a simple listing of information.

At the beginning of the essay the student should:

- outline how his or her research question has arisen:
- through personal interest and/or experience or
- through an issue of the present day that needs to be addressed
- state the essay's research purpose and methodology in connection with the research question.

Research methods

Once students have chosen their topic, it is suggested they make a (flexible) research plan. It should take account of what information is available, or what might become available. Students must have access to sufficient resources, but sometimes the hunt for information can be part of the challenge and become part of the essay itself.

Students' research must include both primary and secondary sources.

Primary sources

Primary sources of information can include:

- the viewing of performances or participation in classes or workshops directly pertaining to the student's topic
- dance references in film, video, DVD and internet sources

- dance notation (but contemporary dance notation systems used by choreographers and ethnographers may be inaccessible to most students)
- photographs of dance performances
- interviews with practitioners
- a statement from a dance practitioner quoted in a book.

Limitations on research into pre-20th-century dance

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.

Students face a challenge researching early or pre-20th-century works because:

- film and videotape only became available in the early to mid-20th century
- ancient dance manuals are few—only a small number of masterpieces from particular styles and cultures have been notated
- dance notation systems have radically changed.

Hence the requirement that students should include a post-20th-century element within their topic and research question.

Secondary sources

Students must place their research question within the broader context of the study of dance by referring to secondary sources such as:

- textbooks
- journals
- the internet.

Students' choice of secondary sources should directly relate to the topic. Their reading may stimulate their own original ideas and provide models for the structure of their essay.

No EE in dance should be based exclusively on secondary sources.

Students can use these questions as prompts while researching and writing their essay, to check they are aware of all the issues they need to consider in developing their analysis and argument.

- 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?
- Do I show a clear awareness of the purpose of the study and how it informs the field of dance?
- Do I show awareness of any possible limitations of my study and can I offer suggestions for future investigations based on the research work I have conducted?

Developing an argument

Students must substantiate their argument with evidence from their research, using both primary and secondary sources. The following questions may help:

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

Students must also evaluate critically the sources they have used. They can ask themselves:

- 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:

- Does using primary sources (dance and dancers) and secondary sources (material about dance) allow them to establish and appraise varying interpretations?
- Does the analysis of sources (primary and secondary) explore and explain particular aspects of dance?
- Does students' primary source material focus on a particular aspect of dance?
- Does the collection and analysis of transmitted dance performances lead to a comparison of similar or different forms of dance?

Examples of topics, research questions and suggested approaches

Once students have identified their topic and written their research question, they can decide how to research their answer. They may find it helpful to write a statement outlining their broad approach. These examples are for guidance only.

Topic	**The influence of Rukmini Arundale on the Bharatanatyam dance form**
Research question	To what extent did Rukmini Arundale influence the re-emergence of the Bharatanatyam dance form in India?
Approach	• A brief overview of the historical origins and style of the Bharatanatyam dance form should be provided to place the topic into a dance-specific context. In particular there should be a discussion of the changes of the dance form due to societal pressures and enforced changes through British rule. • Information about the background of Rukmini Arundale and how she became involved in the Bharatanatyam dance form should be revealed for contextual reference.

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	• The influence of her studies with Meenakshi Sundaram Pillai and dancers such as Anna Pavlova on Rukmini Arundale's artistic development should be discussed to further clarify the influences on her style and interests. • An analysis and discussion of her dance performance in the light of these influences should be given to support the argument of the essay. • A discussion of Rukmini Arundale's involvement in Bharatanatyam and her particular contribution to the revival of the dance form may be presented to further support the argument. • The impact of her work on the founding of the Kalakshetra School and the importance of her philosophy and designed curriculum for the re-emergence of this dance should be outlined to answer the research question. • A conclusion should identify that Rukmini Arundale was one of the major influences in the revival of the Bharatanatyam dance form.

Topic	**The effect of the dances of the "Roaring Twenties" on the changing role of women**
Research question	To what extent did the Charleston affect the changing role of women in the US from 1920 to 1925?
Approach	• A brief contextual overview should be offered of women's suffrage in the United States during the late 19th and early 20th centuries, explaining that these culminated in 1920 with the passage of the Nineteenth Amendment to the United States Constitution, which stated that no one should be denied the vote on account of sex. Specific women leaders in this movement, such as Susan B Anthony, Elizabeth Cady Stanton etc, should be identified and how they brought about change.

	• A summary of the dances that were in vogue, such as the waltz and foxtrot, leading up to the suffrage movement and the dances that evolved during the 1920–25 period, such as the tango and charleston, should be offered to place the topic into the appropriate dance-specific context. • A discussion of the attitudes of and influences on women at that time, such as jazz music, fashion, films etc, and how women changed their behaviour, dress and make-up, should be presented to support the line of argument. A selection of women who were at the forefront of this change should be included, such as Clara Bow and Mary Pickford. • The specific movement content of the charleston and its impact on social dancing should be analysed. In particular, how the dance reflected the energy and mood of the time should be discussed. • The conclusion should identify the significance of the charleston dance and how it echoed the changes in society for women at that time.

Topic	**The role of Louis XIV in politics and the development of ballet**
Research question	To what extent did Louis XIV influence the development of ballet and was dance and ballet in particular a reflection of the social and political standards of that time?
Approach	• A brief overview of Louis XIV's power in religion, trade and politics should be given to place the topic into context. • A brief overview of the history of court dance in the French court, with particular reference to the social importance of dance of the time, should be offered to place the topic into the appropriate dance-specific context.

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	• Louis XIV's role in the development of ballet and the establishing of dance as a performance art should be described to support the argument. • An analysis of how ballet confirmed the social and political standards established by the king, such as the strict rules of social etiquette and the requirement of nobles to be proficient in dance as well as the military arts, should support the argument. • The conclusion should identify the significance of ballet and how Louis XIV used dance to rule his kingdom.

Topic	**The Greek myths in Martha Graham's choreography**
Research question	How and why did Martha Graham draw on the Greek myths in her choreography?
Approach	• A brief overview of Martha Graham's life in dance and the particular influences, such as dancers, philosophers and musicians who played a role in the development of her technique and choreography, should be provided to place the topic into the appropriate dance-specific context. • A discussion on why the Greek myths might provide good subject matter for choreography would offer a preparation and basis to answer the research question. • An overview of specific myths that Martha Graham used in her choreography should be offered to support the line of argument of the essay. • An in-depth analysis of a minimum of two choreographies should be offered to show how Martha Graham applied specific myths. • The conclusion should illustrate key points that highlight the role of Greek myths in Martha Graham's choreography.

Topic	**The influence of modern dance techniques on contemporary dance in the example of the work of Merce Cunningham**
Research question	To what extent did the preceding modern dance techniques influence the emergence and development of contemporary dance?
Approach	• As an introduction, a brief overview could be offered, outlining the emergence and development of modern dance through three eras. The overview should include a summary of the stylistic characteristics and technical features, of each era. To focus the overview, students may find it helpful to highlight specific important dance artists and the focus of their work. For example: 1. Early modern era: Ruth St Denis, Isadora Duncan, Mary Wigman, etc. 2. Central modern era: Doris Humphrey, Charles Weidman, Hanya Holm, etc. 3. Late modern era: Merce Cunningham, José Limon, Paul Taylor, etc. • The argument and discussion will focus on investigating one or more works by Merce Cunnigham's to illustrate the influences from modern dance techniques on specific methods and motivations for creating his work. In contrast and to generate a more holistic picture, the investigation may also discuss other influences which have shaped his work. • The conclusion should summarize the details of influences from modern dance techniques on the work of Merce Cunningham. The summary should generate an insight into the extent of the influences of modern dance on contemporary dance.

Use of external resources

The EE in dance should be modelled on an academic journal or research paper. The reader should be able to read and understand it without access to external web links, video files or DVDs.

Examiners will not access any material contained in an external source when assessing an essay. If information central to the argument is included in the external link, it will be treated as though the point has not been made.

An important note on "double-dipping"

Students must ensure that their EE does not duplicate other work they are submitting for the Diploma Programme. For example, students are not permitted to use the same material they have used for their world dance investigation.

The dance EE and other assessment components

An EE in dance is not an extension of other assessment tasks for the subject. Students must ensure that they understand the differences between them.

- Students may not submit an investigation of a dance they have arranged or research on dances that have influenced the student's submissions for the composition and analysis component.
- Students may not submit research they have conducted for, or any research relating to, the dance investigation component.
- Students may not investigate dances that they have chosen to submit for the performance component.

Supervisors play an important role in guiding students on these distinctions. Students risk their diploma if academic misconduct is detected.

Interpreting the EE assessment criteria

Criterion A: Focus and method

(Strands: Topic, Research question, Methodology)

The topic must focus on analysis, investigation, discussion and evaluation of actual dance; that is, dance must be the source material.

Students should indicate their topic at the beginning of the essay through a clearly stated research question. The question should be focused and specific without unduly restricting the development of the research study.

The research question should lead to a point of view, focus or interpretation.

While students may be inspired by their dance encounters and experiences, it is important that the chosen topic is relevant and has a distinct research purpose.

The essay must outline the methodology that is followed throughout the research. It should include research on a present-day issue, such as:

- analysis of performances
- interviews with choreographers and performers
- questionnaires
- analysis of scores or transcriptions

- collecting data—eg through comparative analysis of interpretations or interviews
- consultation of other primary sources.

The data collection, analysis and evaluation will lead to critical arguments that reflect the student's deeper insight into the material studied.

Students must refer to secondary sources to place the study into a wider context.

Students also need to demonstrate that:

- their essay has been well planned
- the methodology used or the approach to the topic is appropriate to the research question.

Criterion B: Knowledge and understanding

(Strands: Context, Subject-specific terminology and concepts)

To successfully meet this criterion, students are expected to demonstrate their prior knowledge of the material studied and how the research is developed in relation to existing insights. Thus, the essay must demonstrate an effective and critical understanding of the topic chosen.

Students will gain marks for showing a good understanding of the topic itself, rather than a wide knowledge of any dance form, performer or choreographer that is not relevant to the research question. Sufficient preparation and sound understanding of the topic are prerequisites for a successful essay.

Students must ensure that the sources, analysis and evaluation of their data are reliable and valid.

Students must demonstrate a critical awareness of the quality, balance and quantity of their source materials. These should be clearly relevant and appropriate to the research question. They should also be used efficiently and purposefully to demonstrate an understanding of the issues involved.

The information and evidence presented need to be critically evaluated. Students are expected to show awareness of any limitations or uncertainties inherent in their approach.

When appropriate, students should critically comment on the validity and reliability of their findings relative to their management of variables within the investigation.

The essay should be carefully developed and structured. Students must present their arguments in a clear and concise fashion.

Students should use appropriate subject-specific terminology and apply dance concepts accurately in order to communicate their findings.

Criterion C: Critical thinking

(Strands: Research, Analysis and Discussion and evaluation)

The research question should be answered by means of a clear and logical argument that is supported by relevant and appropriate sources. Students should aim to develop their own argument rather than simply adopting the views of critics.

Essays that are predominantly narrative or simply describe the material do not provide evidence of analytical skills and do not score well.

Subjective accounts are not appropriate. Personal views may be relevant but need to be supported by reference to primary and secondary sources.

It is important that students evaluate their research, particularly in terms of:

- unresolved issues and further research questions that may be generated by their study
- the relative value and limitations of the sources used.

These evaluations should be integrated into the body of the essay to give useful insight relative to a source or opinion of a dance historian, choreographer or dancer.

Students must be able to interrogate their sources to gather evidence and develop and support a reasoned argument to answer the research question. The argument should culminate in conclusion(s) being given.

Students should support the points contained in their argument and analysis with material from their research. They should maintain a logical argument focused on the research question throughout.

An assessment of the extent to which the research question is answered by the information accessed should form part of the argument.

Students may draw conclusions throughout the essay to points and arguments made. The final conclusion must be consistent with the position and evidence presented in the essay. It should not introduce material that has not already been discussed. Questions that have arisen as a result of the research, if considered relevant, may also be included.

Criterion D: Presentation

(Strands: Structure, Layout)

This criterion relates to the extent to which the essay conforms to accepted academic standards in relation to how research papers should be presented. It also relates to how well these elements support the reading, understanding and evaluation of the essay.

Students may provide a section and sub-section structure to their essays, with appropriate informative headings.

Use of non-text materials

Any charts, images or tables from literature sources included in the essay must be carefully selected and labelled. They should only be used if they:

- are directly relevant to the research question
- contribute towards the understanding of the argument
- are of a good graphic quality.

Only selected materials—photographs, images, figures and notation scores—that are central to the argument of the essay should be included in the body of the essay, as close as possible to their first reference.

Transcripts of sample interviews collected by the student are best included in an appendix, where they should be carefully labelled (although students should be aware that transcribing is a time-consuming process).

Students must take care in their use of appendices as examiners are not required to read them. All information with direct relevance to the analysis, discussion and evaluation of the essay must be contained in the main body of the essay.

Any material that is not original must be carefully acknowledged, with specific attention paid to the acknowledgment and referencing of quotes and ideas. This acknowledgment and referencing is applicable to audio-visual material, text, graphs and data published in print and electronic sources. If the referencing does not meet the minimum standard as indicated in the guide (name of author, date of publication, title of source and page numbers as applicable), and is not consistently applied, work will be considered as a case of possible academic misconduct.

A bibliography is essential and has to be presented in a standard format. Title page, table of contents, page numbers, etc must contribute to the quality of presentation.

The essay must not exceed 4,000words of narrative. Students should be aware that examiners will not read beyond the 4,000-word limit, nor assess any material presented thereafter. Titles for photographs, images, figures and notation scores are not included in the word count.

Criterion E: Engagement

(Strands: Reflections on planning and progress)

This criterion assesses the student's engagement with their research focus and the research process. It will be applied by the examiner at the end of the assessment of the essay, after considering the student's *Reflections on planning and progress Form* (RPPF).

Students are expected to provide reflections on the decision-making and planning process undertaken in completing the essay. Students must demonstrate how they arrived at a topic as well as the methods and approach used. This criterion assesses the extent to which a student has evidenced the rationale for decisions made throughout the planning process and the skills and understandings developed.

For example, students may reflect on:

- the approach and strategies they chose, and their relative success

- the *Approaches to learning* skills they have developed and their effect on the student as a learner
- how their conceptual understandings have developed or changed as a result of their research
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- questions that emerged as a result of their research
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Effective reflection highlights the journey the student has engaged in through the EE process. Students must show evidence of critical and reflective thinking that goes beyond simply describing the procedures that have been followed.

The reflections must provide the examiner with an insight into **student** thinking, creativity and originality within the research process. The **student** voice must be clearly present and demonstrate the learning that has taken place.

Film: Subject-specific guidance

See also: *Extended essay guide* and *Extended essay teacher support material*

Overview

An extended essay (EE) in film gives students an opportunity to undertake an in-depth investigation into a topic in film of particular interest to them.

Students should undertake the study of at least two films in consideration of their chosen topic.

Complex skills are involved in the interpretation of film. The EE requires students to develop and demonstrate a critical understanding of how and why film texts:

- tell stories
- create emotional responses
- give information.

In the spirit of intercultural understanding promoted by the IB, students should study film in a broad international context (ie beyond Hollywood).

Choice of topic

Students will need guidance in their choice of topic.

The topic must clearly focus on film or television, rather than a literary, sociological, political or historical issue.

For example, a study of film adaptations of Shakespeare's plays or of classic novels must not become a literature essay about the plays or the novels. It must be a discussion about the films from a filmic point of view.

The topic needs to offer enough scope for a substantial essay without being too general. Crucially, it needs to capture the interest and enthusiasm of the student.

The research question must give the essay a sharp focus within the topic and the student has to be perfectly clear about the following.

- What arguments or points of view will they develop or prove in the course of the essay?
- What needs to be said about the topic?
- How will they use evidence to support the ideas under discussion?
- What evidence will be appropriate?

If addressing a topic already addressed in academic studies, students must examine existing views and argue against them to some degree. Earlier studies must be used as a basis for discussion and not be merely replicated.

Students must also avoid:

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- being mainly dependent upon summarizing secondary sources
- approaches that are essentially narrative or descriptive
- approaches that are anecdotal
- being unfocused and too general
- material that is more appropriate to other subject areas.

Students should ensure that they have sufficient sources to support their EE and can access them when needed. Early planning is essential.

Treatment of the topic

Clarity, coherence of ideas and attention to detail are all necessary to achieve an effective EE. Students need a well-formulated research question that allows them to develop an EE that is cogent, rational and economical in expression. Their ideas should be supported by relevant sources and specific reference to film and/or television texts.

Primary sources

For primary sources, there must be detailed references to at least one film (or major television work). Primary sources include:

- the film(s)
- the script
- the screenplay
- the score
- personal contact or personal correspondence with individuals involved in making the film.

Surveys and questionnaires undertaken by the students themselves should be avoided as they are unlikely to offer statistically valid information.

Secondary sources

For secondary sources, students must make close reference to relevant sources (print and other media) related to the question, such as:

- journal and magazine articles
- reviews
- DVD "extras"
- promotional material
- internet material.

Use of sources

Students should:

- evaluate the arguments in the sources rather than simply repeating what they say

- explore a broad range of ideas from different sources, rather than relying heavily on one, or on a number of items from a single author.

Use of visual materials

An EE may be enhanced by visual materials, such as:

- drawings
- diagrams
- storyboard frames
- screenshots
- camera layouts.

However, such material must not be used merely for decorative purposes.

Visual and other source materials must be properly referenced and acknowledged at the end of the essay.

In addition, students' EEs must:

- focus on developing, supporting and illustrating their argument, rather than on plot summary or character description
- use filmic terminology accurately and appropriately.

The most successful essays are often those with a clear voice that transmits the student's enthusiasm and scholarship with clarity and conviction. The EE should reflect the student's coherent and informed engagement with their chosen topic.

Examples of topics, research questions and suggested approaches

Once students have identified their topic and written their research question, they can decide how to research their answer. They may find it helpful to write a statement outlining their broad approach. These examples are for guidance only.

Topic	**Clint Eastwood and the Western**
Research question	To what extent can Clint Eastwood be said to have resurrected the dying genre of the Western?
Approach	An investigation and discussion of whether Clint Eastwood re-established the Western as a credible genre with specific reference to *The Outlaw Josey Wales* (1976), *Pale Rider* (1985) and *Unforgiven* (1992).

Topic	**Neo-noir in colour**
Research question	To what extent can the films *Chinatown* (1974), *Blade Runner* (1982) and *Blood Simple* (1984) be classified as film noir even though they were filmed in colour?

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Approach	An investigation into the origins and characteristics of films classified as film noir and an assessment of how far these films can be defined as belonging to the same genre or style.

Topic	**African film and cultural independence**
Research question	To what extent have the films of Ousmane Sembène retained indigenous content and style in the face of pressures to make films more acceptable to the international market?
Approach	An investigation into how Ousmane Sembène's films achieved and have maintained international status in world cinema, with particular reference to the narrative and visual style of *Xala* (1974), *Guelwaar* (1992) and *Moolaade* (2004).

Topic	**Ang Lee as an international film-maker**
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 international director with films from very different cultural contexts, with particular reference to *Yin shi nan nu* (*Eat Drink Man Woman*) (1994), *Sense and Sensibility* (1995), *Wo hu cang long* – (*Crouching Tiger, Hidden Dragon*) (2000), *Brokeback Mountain* (2005) and *Life of Pi* (2012).

Topic	**Wes Anderson as auteur**
Research question	To what extent can Wes Anderson be considered an auteur?
Approach	An investigation into the origins of auteur theory and a discussion of whether Wes Anderson's films qualify him to be considered an auteur, with specific references to *Rushmore* (1998), *The Royal Tenenbaums* (2001), *Moonrise Kingdom* (2012) and *The Grand Budapest Hotel* (2014).

Topic	**Film and feminism**
Research question	To what extent can theories of the male gaze and feminism be explored filmically?
Approach	An investigation and discussion of the theories of the male gaze and feminism with particular reference to *The Piano* (Jane Campion 1993), *Amelie* (Jean-Pierre Jeunet 2001), *The Hours* (Stephen Daldry 2002) and *Brave* (Mark Andrews 2012).

An important note on "double-dipping"

Students must ensure that their EE does not duplicate other work they are submitting for the Diploma Programme. For example, the EE must not be based on the same films the student has studied for any assessment tasks as part of the course.

The film EE and internal assessment

An EE in film is not an extension of the internal assessment (IA) task. Students must ensure that they understand the differences between the two.

Supervisors play an important role in guiding students on these distinctions. Students risk their diploma if academic misconduct is detected.

Interpreting the EE assessment criteria

Criterion A: Focus and method

(Strands: Topic, Research question, Methodology)

Students must choose a topic that:

- focuses specifically on film (or television)
- is of sufficient substance to merit a 4,000-word academic essay
- can be considered adequately within that word limit.

Students must establish the filmic context and significance of the topic.

Students' research questions must be:

- specific and sharply focused
- stated as a question.

Topics should not be too broad. For example, students can consider three or four films in relation to a genre, but not attempt to make the genre itself their topic. The topic should also not be too narrow (eg just one film).

Students should draw on a wide range of relevant, substantial sources.

Primary sources: students should choose film (or television) texts that are appropriate for addressing the research question and topic. They should be capable of sustaining discussion.

Secondary sources: these should support the ideas discussed or enable the student to present opposing views.

Students should produce a diligent, serious and personal piece of research that is appropriate specifically to the study of film or television and not any other discipline. For example, a study of the film or television adaptations of classic literary texts must not become an essay about the texts from a literary point of view but must focus on the films as films.

Criterion B: Knowledge and understanding

(Strands: Context, Subject-specific terminology and concepts)

There should be clarity and coherence in the knowledge and understanding that students display. They should beware of topics that lead to a narrative approach or a simple listing of facts.

The student must have a substantial body of knowledge at their disposal with which to write a discursive essay and reflect a range of arguments. The student must be able to select and employ accurate information to establish the points of view expressed.

Students must use appropriate subject-specific language to present their ideas and analyse, discuss and argue.

Sources should be considered analytically and discussed, not necessarily agreed with. Students should refrain from using the essay simply to reaffirm their preconceived ideas.

Discussion should be open and various opinions presented. The student should, however, reflect their own personal engagement with the topic.

Criterion C: Critical thinking

(Strands: Research, Analysis and Discussion and evaluation)

The student should be logical, rational and economical in expressing points of discussion. Their ideas must be supported by clear and detailed references to relevant film and/or television texts.

Within the primary sources there should be reference to more than one film (or major television work).

The student's research needs to reflect aspects of film history and/or theory.

Students must be able to construct, present and support a specific area of discussion. They must offer their own personal arguments rather than simply relying upon summarizing the views of others. However, their arguments must be rationally justified and based upon careful research.

Students are also encouraged to view secondary sources with a critical eye and not take the views of critics and scholars as beyond careful scrutiny. Students should be aware that some sources may be unreliable. Students must carefully evaluate their research source material in order to develop a rounded argument. Their evaluation of sources should not be presented in a separate section but be fully integrated into the body of the argument itself.

Students should not present EEs that are too narrative or descriptive in approach. A careful choice of topic and research question will help to avoid this.

Similarly, EEs should not merely explore characters and themes without careful analysis of how these are shown in filmic terms. The essence should be a discussion of how and why particular meanings are constructed filmically.

Criterion D: Presentation

(Strands: Structure, Layout)

This criterion relates to the extent to which the essay conforms to accepted academic standards in relation to how research papers should be presented. It also relates to how well these elements support the reading, understanding and evaluation of the essay.

Illustrative material such as screenshots, sketches, film posters and storyboard frames can enhance the essay. However, they should only be used if they:

- are directly relevant to the research question
- contribute towards the understanding of the argument
- are of a good graphic quality.

They should appear as close to their first mention as possible. If they are used merely for decorative purposes then no credit can be given and this may detract from the flow of discussion.

Any material that is not original must be carefully acknowledged, with specific attention paid to the acknowledgment and referencing of quotes and ideas. This acknowledgment and referencing is applicable to audio-visual material, text, graphs and data published in print and electronic sources. It also applies to any film or screenshot or film sequence referred to in the essay. If the referencing does not meet the minimum standard as indicated in the guide (name of author, date of publication, title of source and page numbers as applicable), and is not consistently applied, work will be considered as a case of possible academic misconduct.

A bibliography is essential and has to be presented in a standard format. Title page, table of contents, page numbers, etc must contribute to the quality of presentation.

The essay must not exceed 4,000 words of narrative. Students should be aware that examiners will not read beyond the 4,000-word limit, nor assess any material presented thereafter. Titles for photographs, images, figures and notation scores are not included in the word count.

Criterion E: Engagement

(Strands: Reflections on planning and progress)

This criterion assesses the student's engagement with their research focus and the research process. It will be applied by the examiner at the end of the assessment of the essay, after considering the student's *Reflections on planning and progress Form* (RPPF).

Students are expected to provide reflections on the decision-making and planning process undertaken in completing the essay. Students must demonstrate how they arrived at a topic as well as the methods and approach used. This criterion assesses the extent to which a student has evidenced the rationale for decisions made throughout the planning process and the skills and understandings developed.

For example, students may reflect on:

- the approach and strategies they chose, and their relative success
- the *Approaches to learning* skills they have developed and their effect on the student as a learner
- how their conceptual understandings have developed or changed as a result of their research
- setbacks they faced in their research and how they overcame these
- questions that emerged as a result of their research
- what they would do differently if they were to undertake the research again.

Effective reflection highlights the journey the student has engaged in through the EE process. Students must show evidence of critical and reflective thinking that goes beyond simply describing the procedures that have been followed.

The reflections must provide the examiner with an insight into **student** thinking, creativity and originality within the research process. The **student** voice must be clearly present and demonstrate the learning that has taken place.

Music: Subject-specific guidance

See also: *Extended essay guide* and *Extended essay teacher support material*

Overview

An extended essay (EE) in music gives students an opportunity to undertake in-depth research into a topic in music of genuine interest to them.

Music—as a form of expression in diverse contexts, with intent, purpose and meaning—should be at the heart of the essay. It must focus on particular pieces of music, experienced by the student through:

- recordings
- score study or
- performances and concerts.

The student is required to embark on a systematic, disciplined and imaginative investigation of musical works. The basis of that investigation, for the purpose of the EE, is musical analysis.

The outcome of the investigation should be a structured and coherent piece of writing in the form of an academic research paper. It requires:

- an analytical research approach, based on both primary and secondary sources
- formal language, including the use of appropriate subject terminology
- meticulous presentation.

Students also need to display:

- knowledge and understanding of their chosen musical context and genre
- critical thinking in relation to their topic through reasoned arguments, discussion, interpretation and evaluation.

Students do not have to be enrolled in the Diploma Programme music course to write an EE in music. However, they must be familiar with the different aspects and requirements of the course.

Choice of topic

Researching and writing their EE allows students to gain a deeper understanding of music. A simple analysis of a piece of music is not enough. Students must also develop critical arguments with the aim of gaining deeper insights into, for example, musical contexts or theory.

Their choice of topic must therefore give them scope to do this.

Sources of ideas may include:

- the Diploma Programme music course
- performances or concerts
- musical cultures students have encountered within their own experience
- personal contact with composers or performers

- direct involvement in the making of music
- recordings (distributed in various forms)
- other music that has a particular interest, emotional appeal or specific importance for the student.

This list is not exhaustive, but is intended for guidance and inspiration.

Topics and research questions for students to avoid

- Research questions that lead to essays that are essentially narrative or descriptive.
- Research questions that are too broad to support effective analysis or argument within 4,000 words. For example, "What is African Music?" or "What influence did Michael Jackson have on the 20th Century?"
- Overly studied themes—they will lead to essays that are obvious or predictable.
- Non-musical topics, such as:
    - the life of a performer
    - the nature and development of instruments or technology
    - lyrics
    - biological, neurological, therapeutic or educational issues.

Research question

Once they have decided upon their area of investigation, students must develop a focused research question. The question must have a clear musical focus but not unduly restrict the development of students' research.

For example, the research question: "How is counterpoint used in Bartók's *Concerto for Orchestra*?" is a good one because:

1. It clearly indicates:
    - the music that will be studied—Bartók's *Concerto for Orchestra*—a musical source of appropriate scope
    - the compositional element—counterpoint—the focus of the investigation.
2. It does not limit the potential development of the study unnecessarily.
3. The investigation of how counterpoint is used in Bartók's concerto could subsequently inform a student's work for the Diploma Programme music course component of creating.

Examples of topics

These examples are just for guidance. Students must ensure their choice of topic is focused (left-hand column) rather than broad (right-hand column).

Focused topics	Broad topics
The role of folk music in Bartók's *Concerto for Orchestra*	Bartók's music

Focused topics	Broad topics
The rhythmic and harmonic aspects in the style of Dizzy Gillespie as evident in pieces X and Y	The features of bebop
Compositional techniques in Balinese gamelan pieces X and Y	The characteristics of Indonesian music
A comparison of the singing styles of Ella Fitzgerald and Sarah Vaughan, as evidenced by their interpretations of standards X, Y and Z	Understanding jazz singing

Treatment of the topic

Musical analysis is the starting point of the investigation, but it is not sufficient for completing the essay successfully. Students are also expected to place their analysis in context:

- to relate their findings to the wider field of music and
- if possible, to add their own creative perspective.

Throughout the EE, their arguments must be supported by findings from their research.

At the beginning of the EE, students should:

- clearly state their research question
- outline their methodology for answering it.

Research methodology

Primary sources

Musical analysis is the starting point for the research and data collection. This may involve the study of a score or recording. Through their analysis, students identify musical elements and compositional devices and how these have been used.

Primary sources of information for students' initial analysis include:

- recordings
- scores
- concerts
- observation
- interviews with performers
- questionnaires or surveys.

Students should also consider the "bigger" picture. Typical questions may start with "Why?", for example:

- Why has the composer made specific musical decisions?
- Why are specific combinations more effective than others?
- Why does a piece of music work in one context but not in another?

Students may also want to discuss:

- performance conventions and interpretations of the piece
- influences on the piece or its genre
- the importance of the piece in its time.

Secondary sources

To inform their explanation and interpretation of their chosen piece of music, students should explore what others have said about:

- the piece of music itself
- its musical context or
- other music of the same genre and style.

Sources for this include:

- textbooks
- books about music
- academic music journals
- the internet.

The EE should not be based exclusively on material from textbooks, scripts or the internet.

When choosing their topic, students must ensure that they will have access to a sufficient range of relevant and appropriate sources. If it becomes clear at an early stage in the research that too few sources are available, students should change their topic.

Developing an argument

Ultimately, students' analysis needs to lead them to formulate a reasoned argument. These questions may help them to do this:

- What are the conclusions and impacts of this investigation?
- What do the results and findings tell us about the field of music?
- What are the lessons learned from the musical analysis of this composition?
- How does it affect other musicians, or my composing and performing studies?

Their conclusion(s) should cover some or all of the following:

- what they have learned from their analysis
- how it fits into the field of research concerning the topic
- any shortcomings of the study and questions that arose but remain unanswered.

To further refine the focus of their topic, students can follow their topic and research question with a statement outlining the research approach they will take to answer it.

Examples of topics, research questions and suggested approaches

Once students have identified their topic and written their research question, they can decide how to research their answer. They may find it helpful to write a statement outlining their broad approach. These examples are for guidance only.

Topic	**Ennio Morricone's film music**
Research question	What compositional techniques support characterization in the music Ennio Morricone wrote for the film *The Mission*?
Approach	• A study of pitch, motives, orchestration and texture used in three pieces from the soundtrack to *The Mission* (musical analysis). • An investigation to determine and discuss how Ennio Morricone's use of musical elements and compositional devices support characterization in the film (eg comparative analysis, questionnaires, literature review).

Topic	**The music of Astor Piazzola**
Research question	What is the significance of Piazzola's *New Tango* style in the development of the genre?
Approach	• An analysis of the harmonic, melodic, rhythmic and stylistic elements in "Libertango" by Astor Piazzola to identify important characteristics of his new tango style (musical analysis). • A brief summary of the history of tango to identify how the characteristics have transformed the genre (eg literature review). • An investigation into how the identified characteristics have impacted upon the further development of the style (eg literature review, musical analysis, interview with composers).

Topic	**Musical contribution of the rock group Muse**
Research question	How do the musical influences found in pieces X, Y and C by the rock group Muse impact upon the listener experience?

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Approach	• An analysis of melodic, rhythmic and harmonic elements in pieces X, Y and C by Muse that reveals influences from Chopin, Schubert and Rachmaninoff respectively (musical analysis). • A discussion of how the influence of composers of the Romantic has shaped the musical style of the group (eg literature review). • An investigation into the impact of these influences on the listener (eg through a questionnaire or interviews).

Topic	**Koto music**
Research question	To what extent are compositions for Koto by Tadao Sawai distinct in the 20th century?
Approach	• A study of three Koto pieces by Tadao Sawai detailing their traditional and innovative elements (musical analysis). • An investigation into the origins of these traditional and innovative elements, what inspired their effective use in these compositions and how they shaped Tadao Sawai's compositional style (eg literature review, interview with performers of these pieces). • A discussion on whether the chosen compositions for Koto break with Japanese musical conventions and traditions (eg comparative analysis, interviews with performers).

Important note on evidence

The EE should be modelled on an academic journal or research paper. The reader should be able to read and understand it without access to external web links, video files, CDs or DVDs.

Examiners will not access any material contained in an external source when assessing an essay (not even in an appendix). If information central to the argument is included in an external link, the examiner will treat it as though the point has not been made.

However, as long as they directly support and are relevant to the EE's analysis, the following do constitute useful evidence:

- notated examples of music
- score excerpts
- transcriptions
- graphs
- references to an attached score.

An important note on "double-dipping"

Students must ensure that their EE does not duplicate other work they are submitting for the Diploma Programme. For example, a student's work for the musical links investigation must not be submitted for an EE. Similarly, the music pieces selected as prescribed works are not acceptable topics for EEs.

The music EE and the internal assessment

An EE in music is not an extension of the internal assessment (IA) task. Students must ensure that they understand the differences between the two.

- Students may not investigate pieces for the EE they have chosen to submit for the performing component.
- Students may not submit research on pieces that have influenced the student's submissions for the creating component.

Supervisors play an important role in guiding students on these distinctions. Students risk their diploma if academic misconduct is detected.

Interpreting the EE assessment criteria

Criterion A: Focus and method

(Strands: Topic, Research question, Methodology)

To successfully meet this criterion, students will chose a topic that focuses on analysis, investigation, discussion and evaluation of actual music, that is, musical source material.

While students may be inspired by their musical encounters and experiences, it is important that the chosen topic is relevant and with a distinct research purpose.

The topic is expressed through a clearly stated research question, which is focused and specific without being unduly restrictive to the development of the research study.

The essay must outline the methodology that is followed throughout the research. It should include:

- musical analysis of performances, scores or transcriptions
- collecting and evaluating data, for example through comparative analysis of:
    - interpretations
    - interviews or
    - questionnaires.

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The data collection, analysis and evaluation will lead to critical arguments that reflect the student's deeper insight into the material studied.

Students must refer to secondary sources to place the study into a wider context.

Students also need to demonstrate that:

- their essay and research has been well planned
- the methodology used or the approach to the topic is appropriate to the research question.

Criterion B: Knowledge and understanding

(Strands: Context, Subject-specific terminology and concepts)

To successfully meet this criterion, students are expected to demonstrate their prior knowledge of the material studied and how the research is developed in relation to existing insights. Thus, the essay must demonstrate an effective and critical understanding of the topic chosen.

Students should show that they have consulted secondary sources and, throughout the investigation, draw on that existing knowledge to:

- support their research
- enrich the argument and findings.

Thus, sufficient musical preparation and understanding are prerequisites for effective research in music, as is fluency in the use of appropriate subject-specific terminology and reference to or application of musical concepts.

Another important aspect of all research and investigation is the reliability and validity of the study. This refers to choice and use of sources, the musical analysis as well as the evaluation of the collected data within the relevant musical context.

The information and evidence presented needs to be critically evaluated. Students must demonstrate critical awareness of the quality, balance and quantity of their sources. They are also expected to show awareness of any limitations or uncertainties inherent in their approach.

Subjective accounts are not appropriate.

Students should demonstrate fluency in the use of appropriate subject-specific terminology and reference to or application of musical concepts.

Criterion C: Critical thinking

(Strands: Research, Analysis and Discussion and evaluation)

Students must be able to interrogate the musical and critical sources selected in order to construct and support a reasoned argument that culminates in a conclusion and answers the research question.

Students should aim to develop their own argument rather than simply adopting the views of critics. EEs that mainly provide viewpoints derived from secondary sources, or that are wholly or largely narrative or descriptive of the material, do not provide evidence of analytical skills and do not score well.

The points contained in the argument and analysis must, at all times, be supported by specific, relevant material chosen from the student's research.

Special efforts should be made to maintain a reasoned, logical argument focused on the research question throughout.

An assessment of the extent to which the research question is answered by the information accessed should form part of the argument.

The conclusion ought to summarize the student's response to the research question and must be consistent with the position and evidence presented in the essay. It should not introduce material that has not already been discussed. Questions that have arisen as a result of the research, and that are considered relevant, may be included.

Criterion D: Presentation

(Strands: Structure, Layout)

This criterion relates to the extent to which the essay conforms to accepted academic standards in relation to how research papers should be presented. It also relates to how well these elements support the reading, understanding and evaluation of the essay.

Students may provide a section and sub-section structure to their essays, with appropriate informative headings.

Use of charts, images and tables

Any charts, images or tables from literature sources included in the essay must be carefully selected and labelled. They should only be used if they are directly relevant to the research question, contribute towards the understanding of the argument and are of a good graphic quality. Only selected materials (photographs, images, figures, notation scores) that are central to the argument of the essay should be included in the body of the essay, as close as possible to their first reference.

Special attention is necessary when including score excerpts so that the information needed to read them appropriately is presented, including name of the work, composer, source information, location of the excerpt within the score, recording or performance, clefs, key signatures, tempo, etc. When size permits, it is recommended that the excerpts appear in the body of the essay, in close proximity to the text they illustrate.

Sometimes, the inclusion of a separate annotated score, to be consulted with the reading of the EE, may be the most effective option. This may be included in the appendix of the EE, but students must be aware that any information with direct relevance to the analysis, discussion and evaluation of the EE must be contained in the body of the essay. Examiners are not required to read information in an appendix.

Any material that is not original must be carefully acknowledged, with specific attention paid to the acknowledgment and referencing of quotes and ideas. This acknowledgment and referencing is applicable to audio-visual material, text, graphs and data published in print and electronic sources. For music, students must also reference transcripts of music and live performances as well as include time within a recording or track and bar numbers within a score. If the referencing does not meet the minimum standard as indicated in the guide (name of author, date of publication, title of source and page numbers as applicable), and is not consistently applied, work will be considered as a case of possible academic misconduct.

A bibliography is essential and has to be presented in a standard format. Title page, table of contents, page numbers, etc must contribute to the quality of presentation.

The essay must not exceed 4,000 words of narrative. Students should be aware that examiners will not read beyond the 4,000-word limit, nor assess any material presented thereafter.

Criterion E: Engagement

(Strands: Reflections on planning and progress)

This criterion assesses the student's engagement with their research focus and the research process. It will be applied by the examiner at the end of the assessment of the essay, after considering the student's *Reflections on planning and progress Form* (RPPF).

Students are expected to provide reflections on the decision-making and planning process undertaken in completing the essay. Students must demonstrate how they arrived at a topic as well as the methods and approach used. This criterion assesses the extent to which a student has evidenced the rationale for decisions made throughout the planning process and the skills and understandings developed.

For example, students may reflect on:

- the approach and strategies they chose, and their relative success
- the *Approaches to learning* skills they have developed and their effect on the student as a learner
- how their conceptual understandings have developed or changed as a result of their research
- setbacks they faced in their research and how they overcame these questions that emerged as a result of their research **student** thinking, creativity and originality within the research process.

The **student** voice must be clearly present and demonstrate the learning that has taken place.

Theatre: Subject-specific guidance

See also: *Extended essay guide* and *Extended essay teacher support material*

Overview

An extended essay (EE) in theatre gives students an opportunity to:

- undertake independent research into a topic in theatre of their choice
- apply a range of skills to develop and explore in an imaginative and critical way a focused research question appropriate to theatre
- test and validate their research by considering its effect on the practice of the area of theatre they have investigated.

Choice of topic

Theatre is composite in nature. Students may therefore take an interdisciplinary approach in their research, so long as their topic is firmly rooted in the subject of theatre. The essay topic may relate to an area of the Diploma Programme theatre course, but students can also choose to explore other areas of the subject. Crucially, the topic must reflect their particular interest and enthusiasm within theatre.

Students can opt to compare two or more theatrical practices, but students should be careful to ensure that their comparisons are valid and the product of sensitive and objective analysis.

Research question

Once they have chosen their topic, students must frame a focused research question.

It is the task of the supervisor to ensure that the question:

- can be answered using theatrical sources available to the student
- will encourage and enable the student to apply theatrical concepts, theories or ideas.

The question's scope should not be too broad as such essays are rarely successful. The best research questions encourage analysis in depth rather than breadth.

Treatment of the topic

The EE's emphasis should always be on:

- written analysis, interpretation, evaluation
- the construction and development of a sound argument.

Research plan and methodology

When they have established their topic and research question, students should then make a research plan. The plan should be flexible enough to allow them to explore their topic in a creative manner. Students should not be afraid to take risks during the research process: originality is encouraged, as is using a variety of research models.

It is vital that students' methodology:

- is tailored to the research question
- allows for an in-depth exploration.

Their personal involvement in the EE is also crucial.

Sources

Students are encouraged to use both primary and secondary sources.

Primary sources

Primary sources of information can include:

- play texts
- productions of plays
- sketches, drawings, pictures, plans, photographs
- reviews of a landmark production
- interviews with playwrights, directors, actors, etc
- drama workshops or exercises
- audio or video recordings.

Audio and video recordings or hyperlinks to videos online cannot be submitted as part of the EE. If students include visual material within the EE, it should further or illustrate their argument rather than be merely decorative. See Use of illustrative material, criterion D

Secondary sources

A good essay will always include a bibliography of high-quality research sources. These give students scope for the in-depth analysis that characterizes the best pieces of work.

Their reading will enable them to:

- establish the wider theatrical context for their research question early in the essay
- support their argument throughout the essay.

Secondary sources of information can include:

- textbooks
- books
- academic journals
- magazines
- the internet.

Students should not rely exclusively on textbooks and websites for their secondary sources—they must read more widely.

Relationship between theory and practice

Students can choose to undertake practical, applied research, but it is not a requirement.

Students can choose to base their EE exclusively on their reading and explore a topic at a purely theoretical level. However, their EE must connect the theory with theatrical practice. The research outcome should always include a practical dimension.

Students should avoid taking a narrow literary approach. For example, an essay exploring the use of fans in Restoration comedy must include a discussion of how a particular production interpreted the convention.

The title of the essay should clearly indicate its main aims and objectives.

Examples of topics, research questions and suggested approaches

Once students have identified their topic and written their research question, they can decide how to research their answer. They may find it helpful to write a statement outlining their broad approach. These examples are for guidance only.

Topic	**Costume design**
Research question	To what extent do Sara Schwartz's costume designs carry the themes explored in the production of *Leonce and Lena* at the Volkstheater?
Approach	A performance analysis of *Leonce and Lena* produced at the Volkstheater in 2010 and the themes explored in it, as declared by the director, such as loss of power, beauty, existentialism and self-sacrifice, through the lens of costume design. Close links are drawn to the text by Büchner and Schwartz's designs, supported by personal interviews. The essay required extensive and repeated visits to the theatre.

Topic	**Traditional Japanese theatre: Noh and Kabuki**
Research question	What part is played by violence in Noh and Kabuki theatre?
Approach	Contextual and socio-historical research of the two forms underpinned a close performance analysis of chosen plays from each form to examine the theatrical techniques used to portray violence on stage. A comparison between the techniques of each form was made to show how the different forms place different significance on the portrayal of violence in telling the theatrical story.

Topic	**Physical theatre**

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Research question	To what extent can social discrimination be discussed through the body in physical theatre? An analysis of DV8's *The Cost of Living*.
Approach	Performance analysis of *The Cost of Living*, first identifying the physical metaphors of broken body and whole body, and linking this to physical characterization techniques. A comparison is made between spoken and physical language as well as their interplay in this production to convey the intended message about physical disability. Secondary research sources range from the general on physical theatre, the moving body etc to the specific: Lloyd Newson and DV8's own writings.

Topic	**Circus and theatre**
Research question	To what extent can theatrical elements transform circus into a piece of theatre? An analysis of Cirque du Soleil's production *Ka*.
Approach	The essay investigates and compares essential elements of theatre and circus and their possible interferences. Elements of theatre such as design, story and characterization in a specific performance were analysed in this production by Cirque du Soleil. Generic elements of circus were also identified in the same performance and a conclusion was drawn as to what extent this performance could be termed "theatre" or to what extent it was "circus". The analysis was dependent on watching a live performance as well as the DVD; extensive secondary sources on theatre and circus as well as reviews, critiques and performance programme notes.

An important note on "double-dipping"

Students must ensure that their EE does not duplicate other work they are submitting for the Diploma Programme. For example, the EE should not be based on the same theatre theorists, play texts, world theatre traditions, starting points or theatre research examined as part of the standard and higher level courses.

Supervisors play an important role in guiding students in this. Students risk their diploma if academic misconduct is detected.

Interpreting the EE assessment criteria

Criterion A: Focus and method

(Strands: Topic, Research question, Methodology)

Students may choose to take an interdisciplinary approach to researching and planning their topic.

Topics need to be appropriate to the subject of theatre. Any topic that is outside the subject of theatre (eg ones that are film or literature based) cannot score above level 0 against criterion A.

Research questions need to be specific, sharply focused and stated clearly in the introduction to the essay. Topics that are too broad, and that cannot be dealt with within the scope of the word limit, should be avoided.

The research question needs to be presented as a question for discussion. It should encourage analysis in depth rather than breadth. Its purpose should be made clear to readers and related to existing knowledge of the topic.

Students should establish the theatrical context related to the research question early in the EE.

Students can choose from a variety of research methods to respond to their chosen research question. Qualitative, quantitative, mixed method and practice-based research are all acceptable.

Students are not required to undertake applied research, but if they choose to explore a purely theoretical topic, their essay must connect the theory with theatrical practice. The research outcome should always include a practical dimension. EEs in which theory and practice are completely divorced from each other or those based on a narrow literary approach will not score highly.

The discussion may also include a critical perspective on secondary source material so that students use the views of critics or practitioners to support their own argument.

The sources used may consist of a stage script or scripts that form the focus of investigation, and secondary sources (eg established theories used appropriately, published criticism on the stage script or scripts used in discussion, reviews of a landmark production or productions). Primary research such as interviews, laboratory exploration through exercises or workshops may be used provided that they are closely related to the chosen research question.

The sources used must provide sufficient material to develop and support an argument and conclusion relevant to the research question.

Criterion B: Knowledge and understanding

(Strands: Context, Subject-specific terminology and concepts)

Students must demonstrate knowledge and understanding of the theoretical background and an awareness of the academic context and its practical applications. They should do this by integrating their own ideas with current philosophical and theoretical thought and their practical application in theatre.

The student must demonstrate a contextual understanding of the chosen area of theatre. The context should be understood as the historical and sociocultural backdrop that informs or shapes a chosen theatre-related topic.

The nature of the chosen topic will determine the emphasis given to the different aspects of context and the direction of the research.

Some essays will have a strong element of applied research, while others may discuss previous or present practices to illustrate their central points.

Students should establish the context succinctly and not pad out an EE with a lengthy descriptive, historical or biographical narrative.

Criterion C: Critical thinking

(Strands: Research, Analysis and Discussion and evaluation)

Students should use a range of sources of information, including both primary sources (stage scripts and theatrical productions) and secondary sources (books, newspapers, magazines and journals, interviews and websites).

The use of other materials such as sketches, drawings, pictures, plans and photographs is encouraged but should not overwhelm the EE's text. Where they are used, they need to be crucial to the development and support of a coherent central argument.

The personal involvement of the student in their essay is of paramount importance, and this can become evident through the research path that is followed.

The research outcome should always include a link, direct or discreet, with a practical dimension.

A successful EE develops an argument, backed up with evidence, to convince readers of the validity of the student's findings. The argument may be personal but at the same time must remain logical and balanced. Reasoned argument must be the EE's fundamental structural basis.

The accumulation of research data may form part of the preparation for the writing of the EE but students must show that they can select relevant elements from this data and analyse and evaluate them in a manner relevant and appropriate to the topic.

Students should be able to analyse and evaluate theatrical work, whether this is a scene from a play, a costume design, a lighting plot or any other aspect that might be part of their topic. The ability to analyse and evaluate is part of the process through which the student articulates a relationship to the work and speaks in 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.

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 or shoehorning of results should be avoided. The need to reconsider and re-evaluate initial ideas and modify the central argument, and an awareness of the need to make constant corrections and to recognize shortcomings are essential elements of theatre research.

Criterion D: Presentation

(Strands: Structure, Layout)

This criterion relates to the extent to which the EE in theatre conforms to current academic standards concerning the presentation of research papers It also relates to how well these elements support the reading, understanding and evaluation of the essay.

EEs in theatre can be presented as a continuous body of text with clearly defined paragraphs or with a section and sub-section structure; the approach taken will be dependent on the nature of the research. The use of charts, images and tables may also be appropriate. They should only be used if they are directly relevant to the research question, contribute towards the understanding of the argument and are of a good graphic quality. Only selected materials that are central to the argument of the essay should be included in the body of the essay, as close as possible to their first reference.

Students must take care in their use of appendices as examiners are not required to read them. All information with direct relevance to the analysis, discussion and evaluation of the essay must be contained in the main body of the essay.

Any material that is not original must be carefully acknowledged, with specific attention paid to the acknowledgment and referencing of quotes and ideas. This acknowledgment and referencing is applicable to audio-visual material, text, graphs and data published in print and electronic sources. The inclusion of visual images may also be a crucial part of providing evidence in support of the student's central argument, and these images should be annotated in an appropriate format, as they need to have an illustrative rather than decorative function. If the referencing does not meet the minimum standard as indicated in the guide (name of author, date of publication, title of source and page numbers as applicable), and is not consistently applied, work will be considered as a case of possible academic misconduct.

A bibliography is essential and has to be presented in a standard format. Title page, table of contents, page numbers, etc must contribute to the quality of presentation.

The essay must not exceed 4,000 words of narrative. Students should be aware that examiners will not read beyond the 4,000-word limit, nor assess any material presented thereafter.

Criterion E: Engagement

(Strands: Reflections on planning and progress)

This criterion assesses the student's engagement with their research focus and the research process. It will be applied by the examiner at the end of the assessment of the essay, after considering the student's *Reflections on planning and progress Form* (RPPF).

Students are expected to provide reflections on the decision-making and planning process undertaken in completing the essay. Students must demonstrate how they arrived at a topic as well as the methods and approach used. This criterion assesses the extent to which a student has evidenced the rationale for decisions made throughout the planning process and the skills and understandings developed.

For example, students may reflect on:

- the approach and strategies they chose, and their relative success
- the *Approaches to learning* skills they have developed and their effect on the student as a learner
- how their conceptual understandings have developed or changed as a result of their research
- setbacks they faced in their research and how they overcame these
- questions that emerged as a result of their research
- what they would do differently if they were to undertake the research again.

Effective reflection highlights the journey the student has engaged in through the EE process. Students must show evidence of critical and reflective thinking that goes beyond simply describing the procedures that have been followed.

The reflections must provide the examiner with an insight into **student** thinking, creativity and originality within the research process. The **student** voice must be clearly present and demonstrate the learning that has taken place.

Visual arts: Subject-specific guidance

See also: *Extended essay guide* and *Extended essay teacher support material*

Overview

An extended essay (EE) in visual arts gives students an opportunity to undertake research in an area of the visual arts of particular interest to them.

The visual arts are here broadly defined also to include architecture, design and contemporary forms of visual culture.

The outcome of the research should be a coherent and structured piece of writing, with well-integrated and appropriate illustrations, and which effectively addresses a particular research question appropriate to the visual arts.

The research may be generated or inspired by the student's direct experiences of creating visual artworks, or by their interest in the work of a particular artist, style or period. This might be related to the student's own cultural context or another cultural context.

Personal contact with artists, curators and other active participants in the visual arts is encouraged, as is the use of local and primary sources.

Choice of topic

The EE topic may relate to an area of the Diploma Programme visual arts course, but students can also choose to explore other areas of the subject. Crucially, the topic must reflect their particular interest and enthusiasm within the visual arts.

Sources of ideas may include:

- the student's own art-making processes and resolved pieces
- the student's visual arts journal.

Topics to avoid

- A topic that a student can answer by summarizing general secondary sources, such as universal art history textbooks and encyclopedias.
- A topic that is likely to lead to an EE that is essentially narrative or descriptive in nature, such as one that covers many aspects of art history or particularly long periods of time.
- Biographical studies of artists—unless they address a specific research question so that the student can arrive at a particular, and preferably personal, conclusion.

Visual arts and other subjects

The topic must relate directly to the visual arts. Students may find that they need to submit their essay under another subject. For example:

- Essays on "green" architecture that focus on technology rather than esthetic considerations would be better submitted under environmental systems and societies.
- Essays about film that do not focus on the visual aspects probably belong under film studies.

Examples of topics

These examples are just for guidance. Students must ensure their choice of topic is focused (left-hand column) rather than broad (right-hand column).

Focused topics	Broad topics
The extent to which Grady Gerbracht's assertion that the role of the artist is "to become the embodiment of a person, a citizen, a metaphor" is particularly embodied in interactive artworks	Installation art
The artistic significance of recent poles raised by the First Nations of Haida-Gwai	The art of Native North American people
The extent to which the manipulation of cadavers can be considered art: an investigation of the interdependence of science, art and the representation of death in the works of Damien Hirst and Gunther von Hagens	Damien Hirst's and Gunther von Hagens's representation of death

Research question

Once they have chosen their topic, students must frame a focused research question.

The connection between the research question and the visual arts should be more than just incidental. Otherwise, students risk introducing material that is of marginal relevance, will confuse their inquiry and weaken their argument.

It is the task of the supervisor to ensure that the question:

- can be answered using artistic sources available to the student
- will encourage and enable the student to apply relevant art theory or concepts
- allows a systematic investigation that demonstrates critical artistic analysis and detailed understanding.

Students should be encouraged to formulate a research question of personal interest and to draw on a variety of sources to support their arguments. They should also be helped to identify and choose appropriate sources, both primary and secondary, and appropriate methods of research.

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, students should change their focus.

Treatment of the topic

Once they have their research question, students should make a research plan. The plan should be flexible enough to allow the students to explore the topic in a creative manner. They should not be afraid to take risks throughout the research process: originality is encouraged, as is the use of a number of different research models.

It is vital that the methodology of the EE is tailored to the research question and allows for an in-depth exploration.

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

- use of primary sources (artworks and artists) and secondary sources (material about the visual arts) in order to establish and appraise varying interpretations
- analysing secondary sources in order to explore and explain particular aspects of the visual arts
- using primary source material for analysis, with emphasis on a particular aspect of visual arts
- collecting and analysing reproductions of artworks, possibly leading to a comparison of similar or different images.

Students should also demonstrate awareness of other issues surrounding the artworks 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 a well-substantiated argument.

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

The emphasis of the EE should always be on written analysis, interpretation, evaluation and the construction and development of a sound argument.

Visual reference material

The inclusion and discussion of appropriate visual reference material is mandatory. Such material must, however, be directly supportive of, and relevant to, the analysis or argument. Images should be appropriately presented and 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 EE, the use of local and primary sources should be encouraged wherever possible. Where students do not have access to primary sources they may rely on high-quality reproductions or images of sources.

Students are expected to evaluate critically the resources consulted during the process of writing the EE 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?

Finally, an EE in visual arts is a formal essay, so students must pay 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.

Examples of topics, research questions and suggested approaches

Once students have identified their topic and written their research question, they can decide how to research their answer. They may find it helpful to write a statement outlining their broad approach. These examples are for guidance only.

Topic	**Cultural influences on Pablo Picasso's work**
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.

Topic	**Architectural influences: the Pompidou Centre**
Research question	How were Sir Richard Rogers and Renzo Piano influenced by the Maison de Verre designed by Pierre Chareau in their design and construction of the Pompidou Centre in Paris?
Approach	An original investigation into the stylistic similarities in the architecture of these two buildings.

Topic	**The impact of immigration on an artist's work**
Research question	What is the impact of transcultural experience on the art of Gu Xiong?
Approach	An investigation into the effects of migration, from China to Canada, on a selected artist's work.

An important note on "double-dipping"

Students must ensure that their EE does not duplicate other work they are submitting for the Diploma Programme. For example, artists and art works selected for study within the art comparative study task would not be appropriate for study within the EE.

The visual arts EE and internal assessment

An EE in visual arts is not an extension of the internal assessment (IA) task. Students must ensure that they understand the differences between the two.

Supervisors play an important role here in guiding students on these distinctions. Students risk their diploma if academic misconduct is detected.

Interpreting the EE assessment criteria

Criterion A: Focus and method

(Strands: Topic, Research question, Methodology)

The EE must be specific and sharply focused on a research question, which needs to be stated as a question that is well connected to the visual arts. In addition to traditional forms of so-called "fine art", the visual arts should be understood to also include some aspects of architecture, design and contemporary forms of visual culture.

Titles must give a clear indication that the research is significant and should not, for example, lead to a simple narrative account of an artist's life or compare the work of two randomly chosen artists.

While a topic with opportunities for access to original artworks is a good choice, this is not a requirement and students should not shy away from library-based research.

If students choose a popular topic that has been well researched by others (eg an essay on Banksy or the French Impressionists), they must attempt to structure a research question that may lead to a new point of view, focus or interpretation.

The significance of the research must be explained and some indication of how the research question relates to existing knowledge in the visual arts must be given.

In the visual arts, sources are expected to include visual images—some of which (depending on the area of research) may even be the student's own photographs.

Students need to demonstrate that their essay has been well planned and that they have selected an appropriate approach to address the research question.

Criterion B: Knowledge and understanding

(Strands: Context, Subject-specific terminology and concepts)

Students must be critically aware of sources related to their area of study, particularly those that help to place their work in historical, social or cultural context.

Although the internet can provide a good source of visual material, it is expected that in choosing written sources that support their argument students will move beyond an exclusive reliance on internet references.

Students must demonstrate knowledge and understanding of the visual arts through fluency in the use of appropriate terminology when discussing formal artistic aspects (such as terms related to an understanding of the elements and principles of design).

Vocabulary used by art historians, critics and scholars in cultural studies may also be important (eg, using appropriate vocabulary related to artistic periods or styles). The student must try to maintain a consistent linguistic style throughout the essay.

Criterion C: Critical thinking

(Strands: Research, Analysis and Discussion and evaluation)

Students who are familiar with scholarly writing in the visual arts (art history, art criticism, cultural studies) will be aware of the need for clarity and coherence.

Students must be aware of the need to give their essays the backbone of developing argument that is clearly related to the research question.

A clear and logical argument is often achieved by making consistent reference to the research question throughout the essay.

Personal views, while they may be quite common in the visual arts, need to be supported by reasoned argument, often with reference to images, interviews with artists, site visits etc, as well as carefully evaluated written material.

While some biographical information may help to advance an argument, the simple recounting of an artist's life may not always be helpful.

It is important for students to evaluate their own research, particularly in terms of unresolved issues and further research questions that may be generated by their study.

Criterion D: Presentation

(Strands: Structure, Layout)

This criterion relates to the extent to which the essay conforms to accepted academic standards in relation to how research papers should be presented. It also relates to how well these elements support the reading, understanding and evaluation of the essay.

Students may provide a section and sub-section structure to their essays, if this is appropriate for the topic area chosen. Students should be aware of the appropriate format for their chosen subject.

Use of images

Carefully chosen and referenced images form an integral part of an essay in the visual arts. Images should be placed and discussed in the body of the text. They should be scanned or copied at good resolution and be of a reasonable size.

Referencing images is as important as documenting text. The reference must include:

- artist's or designer's name
- title of the work
- ownership

- (where relevant) dimensions and media
- source from which the image was scanned or downloaded.

Students should give each image appearing in the body of the essay a brief caption (eg artist's name and title of the work). Full details can be given in a list of images placed immediately after the bibliography or references.

Any material that is not original must be carefully acknowledged, with specific attention paid to the acknowledgment and referencing of quotes and ideas. This acknowledgment and referencing is applicable to images, audio-visual material, text, graphs and data published in print and electronic sources. If the referencing does not meet the minimum standard as indicated in the guide (name of author, date of publication, title of source and page numbers as applicable), and is not consistently applied, work will be considered as a case of possible academic misconduct.

A bibliography is essential and has to be presented in a standard format. Title page, table of contents, page numbers, etc must contribute to the quality of presentation.

The essay must not exceed 4,000 words of narrative. Students should be aware that examiners will not read beyond the 4,000-word limit, or assess any material presented past this.

Criterion E: Engagement

(Strands: Reflections on planning and progress)

This criterion assesses the student's engagement with their research focus and the research process. It will be applied by the examiner at the end of the assessment of the essay, after considering the student's *Reflections on planning and progress Form* (RPPF).

Students are expected to provide reflections on the decision-making and planning process undertaken in completing the essay. Students must demonstrate how they arrived at a topic as well as the methods and approach used. This criterion assesses the extent to which a student has evidenced the rationale for decisions made throughout the planning process and the skills and understandings developed.

For example, students may reflect on:

- the approach and strategies they chose, and their relative success
- the *Approaches to learning* skills they have developed and their effect on the student as a learner
- how their conceptual understandings have developed or changed as a result of their research
- setbacks they faced in their research and how they overcame these
- questions that emerged as a result of their research
- what they would do differently if they were to undertake the research again.

Effective reflection highlights the journey the student has engaged in through the EE process. Students must show evidence of critical and reflective thinking that goes beyond simply describing the procedures that have been followed.

The reflections must provide the examiner with an insight into **student** thinking, creativity and originality within the research process. The **student** voice must be clearly present and demonstrate the learning that has taken place.

Interdisciplinary essays

An interdisciplinary extended essay (EE) gives students an opportunity to undertake an in-depth and independent investigation into a topic of their choice that considers the relationship between subjects and allows for meaningful connections to be made in relation to their chosen area of research.

For a longer general introduction to undertaking an EE in an interdisciplinary subject area, see Interdisciplinary essays: An introduction .

Environmental systems and societies: Subject-specific guidance

See also: *Extended essay guide* and *Extended essay teacher support material*

Overview

Environmental issues occupy a position of increasing significance on the world agenda. An EE in environmental systems and societies gives students an opportunity to explore an environmental topic of particular interest to them.

Since the subject is interdisciplinary, the student will need to select and integrate theoretical contexts and methodologies with those academic disciplines appropriate to the chosen topic.

In this respect, a systems approach is particularly effective, and students will be expected to use this approach in the analysis and interpretation of their data.

Choice of topic

Environmental systems and societies focuses upon the interaction and integration of "natural" environmental systems and human societies. An EE in this subject should give significant (though not necessarily equal) weight to both these dimensions.

The topic should allow the student to demonstrate some grasp of how environmental systems and societies function together. For example:

- studying pure ecological principles within the context of human interaction with the environmental system
- addressing philosophical approaches to the environment in relation to specific natural systems.

Students must ensure that their topic would not be better submitted under one of the specialized subject areas of the experimental or the human sciences. For example, topics focusing exclusively on human health, disease or politics are usually more appropriate to a single-discipline essay.

The topic must be open to analytical argument. If it lends itself only to a descriptive or narrative treatment, the student will be unable to achieve marks for critical thinking in the assessment criteria.

For example, it would be of minimal value simply to **describe** a given nature reserve. Instead, the topic should involve an **evaluation** of the reserve's relationship with a local community, or a **comparison** of its achievement with its original objectives or with those of another conservation initiative.

The topic must enable students to construct and support an argument from their own analysis of the information, rather than simply reporting others' analysed data.

Some topics are unsuitable for ethical or safety reasons, such as those requiring experiments that might:

- inflict pain on living organisms
- cause unwarranted environmental damage

- put pressure on others to behave unethically.

Experiments that pose a threat to health, possibly using toxic or dangerous chemicals, or putting oneself at physical risk during fieldwork, must also be avoided unless adequate safety apparatus and qualified supervision are available.

Students must adhere to the IB *Guidelines for the use of animals in IB World Schools*. They must familiarize themselves with this before undertaking an EE in environmental systems and societies.

The topic must have a sharp focus. If it is too broad, it will inevitably lead to a relatively superficial treatment that is likely to self-penalize the student 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.

Examples of topics

These examples are just for guidance. Students must ensure their choice of topic is focused (left-hand column) rather than broad (right-hand column).

Focused topics	Broad topics
The ecological recovery of worked-out bauxite quarries in Jarrahdale, Western Australia	Environmental effects of mining
A comparison of the energy efficiency of grain production in the Netherlands and Swaziland	Efficiency of world food production
The comparative significance of different sources of carbon dioxide pollution in Nairobi and Mombasa	Impacts of global warming
Managing the environmental impact of paper use at a school in Quito (Ecuador)	Paper recycling

Treatment of the topic

Students can investigate their question by:

- primary data collection, eg from fieldwork, laboratory experimentation, surveys or interviews
- secondary data collection, eg from literature or other media
- a combination of primary and secondary data collection.

If collecting primary data, the student needs to select appropriate methods to do this and carry them out effectively.

Literature review

All students must demonstrate that they have engaged in background reading on their topic, regardless of their method of research.

Primary data

Before beginning the investigation, students should read about the different methods of collecting data and any pertinent research that may give them guidelines and useful points of theoretical comparison.

Students' reading should be evident both in their essay and its bibliography. They can refer to what they have read to support their choice of methods or provide an academic context for their conclusions.

Secondary data

If the essay is focused on secondary data, students need to ensure their sources are:

- of a sufficient quantity and range
- all reliable.

Students should use only those sources that have academic credibility, whether in print or online. Their bibliography should be substantial, not limited to just a few sources.

Analysis

Whatever their sources of data, students must produce their own analysis and argue their own conclusions.

For some students this will happen more naturally if the essay is based on primary data.

If students are using secondary data, they must disregard any earlier analysis and conclusions. It is essential that students manipulate the data in their own way, or possibly synthesize it with other sources, in order to support their own research question.

Using the systems approach

The systems approach is a central theme in the environmental systems and societies syllabus and this should be reflected to some degree in the EE. The essay should include an attempt to model, at least partially, the system or systems in question.

The term "model" in this context includes, for example:

- mathematical formulae
- maps
- graphical representations
- flow diagrams.

Students should also use the terminology from the environmental systems and societies course, where appropriate.

Examples of topics, research questions and suggested approaches

Once students have identified their topic and written their research question, they can decide how to research their answer. They may find it helpful to write a statement outlining their broad approach. These examples are for guidance only.

Topic	**The ecological footprint of the school cafeteria**
Research question	What overall estimate of the environmental impact of the school cafeteria can be made in terms of an ecological footprint?
Approach	An analysis of records and practical measurements assessing the inputs and outputs of the cafeteria, and a synthesis of data into a holistic model indicating the environmental impact.

Topic	**Architectural sustainability and the future of Vancouver Island**
Research question	What forms of sustainable construction may be utilized in the future on Vancouver Island (Canada)?
Approach	An analysis of current sustainable building techniques and comparison of the environmental impacts of two options of sustainable housing.

Topic	**Revival of the gray wolf in the National Forest of Colorado**
Research question	Is the reintroduction of *Canus lupus* in the Pike and Isabel National Forests of Colorado (USA) possible, even with a significant cattle presence?
Approach	Presenting a potential reintroduction area and analysing, using secondary data, the viability of wolf introduction within the proposed area.

Topic	**Comparing air pollution levels between a rural and an urban area in the UK**
Research question	Is there a significant difference in air quality between central Cambridge and Sawston (UK)?
Approach	A fieldwork investigation using data loggers and probes to collect data. Comparison of the results with secondary data from different regions.

An important note on “double-dipping”

Students must ensure that their EE does not duplicate other work they are submitting for the Diploma Programme.

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The environmental systems and societies EE and internal assessment

In particular, an EE in environmental studies is not an extension of the internal assessment (IA) task. Students must ensure that they understand the differences between the two.

- For the IA there is a specific requirement to address a broad issue from the course and to develop a focused research question based on this issue. For the EE there is a greater emphasis on a detailed literature review that leads onto the research question.
- For the IA the findings of the study must be applied to offer a solution or proposal to address the broad issue initially identified by the student. This stage is not required for the EE.
- The IA is limited to a maximum of 2,250 words and therefore the scope of the investigation is smaller.

Supervisors play an important role here in guiding students on these distinctions. Students risk their diploma if academic misconduct is detected.

Interpreting the EE assessment criteria

Criterion A: Focus and method

(Strands: Topic, Research question, Methodology)

An EE in environmental systems and societies should focus upon the interaction of the natural environment and human societies. Students must ensure that the topic would not be better submitted under a subject area within the experimental or human sciences.

The topic should be precise and focused and clearly established in the research question, which must be posed as a question. For example, "The potential of residential solar power systems to meet the demands in Canberra, Australia" is better than "Efficiency of solar energy".

The research question should not be understood as a statement of the topic but rather as a specifically expressed question that the research will attempt to answer. It leads on from the topic area chosen, for example: "To what extent can residential solar power systems meet the energy demands in Canberra, Australia?"

The question must encourage critical argument rather than a descriptive or narrative response.

Students should explain the significance of the research and indicate how the research question relates to existing knowledge.

They also need to demonstrate that the research has been well planned and that they have selected an appropriate approach to address the research question.

If the approach involves experimentation or practical fieldwork, a detailed description of the methodology used should be provided that would allow the work to be repeated.

The sources consulted must be sufficient and each must contribute to the research focus of the essay.

If the study is based on secondary data, students need to ensure that the selection of sources is wide and reliable. Students must be particularly aware of the potential unreliability of internet-based sources.

Criterion B: Knowledge and understanding

(Strands: Context, Subject-specific terminology and concepts)

The EE must demonstrate an effective understanding of the place of the research question in a broader environmental systems and societies context. For example, in an essay on the effects of a specific human activity on the environment, the student may use repeated measurements on the ground, satellite images or maps.

Students should show clear and perceptive links between their own study and the body of theoretical knowledge associated with the subject. The literature cited should predominantly come from acknowledged scientific sources and be applied effectively to support the student's argument.

Students need to show fluency in the use of appropriate environment-related terminology and avoid excessive use of jargon. Any technical terms that are used should be clearly explained. The student must demonstrate an understanding of these terms by using them appropriately within the text.

There should be a clear step-by-step and logical argument linking the raw data to the final conclusions.

Students should maintain a consistent linguistic style throughout the essay.

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

Criterion C: Critical thinking

(Strands: Research, Analysis and Discussion and evaluation)

Students can carry out their research using:

- data taken from literature sources
- data they have collected themselves.

Their research must be consistently relevant to the research question.

Students can demonstrate analytical skills in the selection, manipulation and presentation of any quantitative or qualitative data that they collect. These skills are well displayed in graphical representations, mathematical manipulations or flow diagrams.

Analytical skills may also be evident in the student's ability to:

- select specific data from sources
- identify the data's relevance and relationships to one another
- reorganize the data to support 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.

Students should not select essays in which ideas are presented as a simple list of the pros and cons of the topic followed by an overall summary as this shows a lack of true analysis. For example, essays comparing two different sources of energy tend to be largely descriptive in nature with no real argument. These do not provide any evidence of analytical skills and will therefore be compromised under this assessment criterion.

Students can include their person opinions but must substantiate them with available evidence.

Students must evaluate their own research, particularly in terms of unresolved issues and further research questions that may be generated by their study.

Criterion D: Presentation

(Strands: Structure, Layout)

This criterion relates to the extent to which the essay conforms to accepted academic standards in relation to how research papers should be presented. It also relates to how well these elements support the reading, understanding and evaluation of the essay.

Students should provide a section and sub-section structure to their essays, with appropriate informative headings.

Any charts, images or tables from literature sources included in the essay must be carefully selected labelled and referenced. They should only be used if they are directly relevant to the research question, contribute towards the understanding of the argument and are of a good graphic quality.

Large tables of raw data collected by the student are best included in an appendix, where they should be carefully labelled. Tables of processed data should be designed to clearly display the information in the most appropriate form. Graphs or charts drawn from the analysed data should be selected to highlight only the most pertinent aspects related to the argument. Too many graphs, charts and tables will distract from the overall quality of the communication. Only 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. Tables should enhance a written explanation; they should not themselves include significant bodies of text. If they do, then these words must be included in the word count.

If an experimental method is long and complex, students may place the protocol in an appendix and just include a summary of the methods in the body of the essay. Students who choose this option must ensure that the summary contains all elements that contribute to the quality of the investigation, since appendices are not an essential section of the EE and examiners are not required to read them. In other words, any important information that contributes to the evaluation of the method must be in the body of the essay and not the appendix.

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 in the main body of the essay. The remainder can be displayed in tabular or graphical form.

Any material that is not original must be carefully acknowledged, with specific attention paid to the acknowledgment and referencing of quotes and ideas. This acknowledgment and referencing is applicable to audio-visual, material, text, graphs and data published in print and electronic sources. If the referencing does not meet the minimum standard as indicated in the guide (name of author, date of publication, title of source and page numbers as applicable), and is not consistently applied, work will be considered as a case of possible academic misconduct.

A bibliography is essential and has to be presented in a standard format. Title page, table of contents, page numbers, etc must contribute to the quality of presentation.

The essay must not exceed 4,000 words of narrative. Students should be aware that examiners will not read beyond the 4,000-word limit, nor assess any material presented thereafter. Graphs, figures, calculations, diagrams, formulas and equations are not included in the word count.

Criterion E: Engagement

(Strands: Reflections on planning and progress)

This criterion assesses the student's engagement with their research focus and the research process. It will be applied by the examiner at the end of the assessment of the essay, after considering the student's *Reflections on planning and progress Form* (RPPF).

Students are expected to provide reflections on the decision-making and planning process undertaken in completing the essay. Students must demonstrate how they arrived at a topic as well as the methods and approach used. This criterion assesses the extent to which a student has evidenced the rationale for decisions made throughout the planning process and the skills and understandings developed.

For example, students may reflect on:

- the approach and strategies they chose, and their relative success
- the *Approaches to learning* skills they have developed and their effect on the student as a learner
- how their conceptual understandings have developed or changed as a result of their research
- setbacks they faced in their research and how they overcame these
- questions that emerged as a result of their research
- what they would do differently if they were to undertake the research again.

Effective reflection highlights the journey the student has engaged in through the EE process. Students must show evidence of critical and reflective thinking that goes beyond simply describing the procedures that have been followed.

The reflections must provide the examiner with an insight into **student** thinking, creativity and originality within the research process. The **student** voice must be clearly present and demonstrate the learning that has taken place.

Literature and performance: Subject-specific guidance

See also: *Extended essay guide* and *Extended essay teacher support material*

Overview

A literature and performance extended essay (EE) gives students an opportunity to explore in detail the relationship between a written text and its performance. Students are able to focus on the transformation from one form to another and examine the creative and critical relationship that exists between both.

The adaptation may take many forms: theatre, film, dance, opera and even video games.

Although an EE in this subject may involve an element of creativity, analysis and reasoned argument are fundamental to success.

Choice of topic

A literature and performance essay must include:

- a balanced consideration of the written text and the performance
- an exploration of the ways they function in a creative and critical relationship with one another.

Students should provide those materials that give a good account of both the text and its transformation into any of the genres mentioned in "Overview" above. These materials may include, for example, diagrams and photographs, but students should be aware that the heart of the essay is their written discussion of both forms.

Crucially, the topic should be susceptible to critical analysis. The EE's central purpose is one of research and analysis. Students must present their perceptions in a reasoned argument well supported by evidence.

Students should make clear the temporal and spatial contexts of both elements: text and transformed production. This will involve a consideration as far as is necessary of the work's:

- history—both literary and theatrical
- geography
- linguistic circumstances
- ethnic circumstances
- socio-economic circumstances.

While formal elements are likely to be in the foreground, they must not be treated in isolation.

Finally, the essay should indicate, explicitly or implicitly, the appropriate theoretical understanding or awareness of the chosen genres, and should employ terminology appropriate to the form where relevant.

Examples of topics

These examples are just for guidance. Students must ensure their choice of topic is focused (left-hand column) rather than broad (right-hand column).

Focused topics	Broad topics
A study of the evolution of identity in a theatrical adaptation of *The Color Purple*	Identity in *The Color Purple*
The way narrative motifs in *The Berlin Stories* present themselves theatrically in the musical *Cabaret*	Narrative motifs in the musical *Cabaret*
A study of the portrayal of Christopher Boone in the stage adaptation of *The Curious Incident of the Dog in the Night-Time* in comparison with the original literary characterization	A study of Christopher in *The Curious Incident of the Dog in the Night-Time*

Treatment of the topic

The focus of the EE must be on the research and critique of an existing adaptation. Students are not permitted to adapt a text themselves.

The student will first need to identify a situation where a text has been adapted to some form of performance, whether this be theatre, film, opera, dance, music or other contemporary forms of transformation.

The text

The text must be fully available to the student and referenced as such. It must be of sufficient depth and complexity to enable the student to apply critical-thinking skills.

Genres for the text may range widely, with poetry, fiction and non-fiction as the most likely starting point. Appropriate literary works may be chosen from any source including the Diploma Programme prescribed list of authors.

Forms such as flash fiction, fan fiction, interactive digital texts and the like may also be viable. Their suitability to this research task must be explored by the student in order to fully satisfy the criteria of the EE. The student should do this in consultation with their supervisor.

Students may choose to use two or more texts, but should always aim for depth rather than breadth.

The adaptation for performance

There needs to be some form of adaptation that can be identified as having its roots in a particular text or even a set of short texts. Such adaptations may take many forms.

Students need to work with both the primary text and the adaptation. They will explore the decisions that have been made for the performance, both generally and in the specific details. The process and the outcomes will form the basis of the student's research question to be explored in the essay.

The focus of discussion in the essay must be:

- critical analysis of both artistic forms—text and performance
- the process of transformation from one to the other, and

- the effects of this transformation.

A narrative approach—retelling the content and sequence of either form—will not meet the demands of the essay.

The student is permitted to include visual material to convey the nature of the transformation, insofar as it is needed to support the argument. All visual material should be clearly annotated to explain its relevance.

Secondary sources, both print and digital, relating to both text and performance, will have a "secondary" role, as the focus of the discussion must be the student's own exploration and evaluation of the two elements. The purpose of the research undertaken is for students to deliver a critical argument based on their perceptions of the transformation and how meaning and experience are shaped by establishing a relationship between the two forms.

Examples of topics, research questions and suggested approaches

Once students have identified their topic and written their research question, they can decide how to research their answer. They may find it helpful to write a statement outlining their broad approach.

Topic	**Jerome Robbins' choreography of *West Side Story* and William Shakespeare's *Romeo and Juliet***
Research question	The question could be phrased as: "How does the Jerome Robbins choreography of *West Side Story* transform the original meaning and effect of Shakespeare's *Romeo and Juliet?*"
Approach	The student will need to identify some central aspects of Shakespeare's play and point out their presence in *West Side Story*. Then the choreography will need to be closely examined to discern and evaluate how dance has been used to transform and heighten the meanings and emotional effects of the original play. Presumably the student will possess the appropriate vocabulary for discussing choreography.

Topic	**Benjamin Britten's transformation of *The Turn of the Screw* into an opera**
Research question	What elements of the original James story has Britten successfully delivered in the operatic version?
Approach	The student will need to select some elements of the original story that Britten has chosen as his focus, analyse how the opera has presented these, and with what degree of success, judged in terms of such elements as suspense and atmosphere.

Topic	**Costuming in Flaubert's portrayal of Emma in *Madame Bovary***

Research question	How is Flaubert's portrayal of Emma in *Madame Bovary* delivered and affected by the costuming in the film version by Claude Chabrol (1991) or that of Vincente Minnelli (2014)?
Approach	The question asks the student to look carefully first at Emma in the novel and how the details of her dress contribute to her overall portrayal in tandem with her actions, words and gestures. Then, choosing a film, the student will need to cite particular instances of costuming, critiquing the comparative outcomes as they are viewed by modern audiences. Presumably, some evaluative comments might well ensue from this study.

Topic	**Sherlock Holmes and Watson as they are depicted in the current television production of *Elementary***
Research question	How have the changes in Watson in the television production *Elementary* affected the portrayal of both Holmes and Watson?
Approach	The student will need to consider Conan Doyle's delivery of the relationship between Holmes and Watson, exploring some of the critical work that has been written on this aspect of the fiction. The treatment of *Elementary* will then need to analyse the quality of this new dynamic, critiquing how it affects the partnership.

An important note on "double-dipping"

Students must ensure that their EE does not duplicate other work they are submitting for the Diploma Programme. For example, the same work cannot be used for the EE that has formed the basis of the written coursework on major playwrights in performance.

The literature and performance EE and other assessment components

An EE in literature and performance is not an extension of any other assessment task for the subject. Students must ensure that they understand the clear distinction between these assessment tasks and the EE.

Supervisors play an important role here in guiding students on these distinctions. Students risk their diploma if academic misconduct is detected.

Interpreting the EE assessment criteria

Criterion A: Focus and method

(Strands: Topic, Research question, Methodology)

In terms of the choice of topic, the research question must be specific and sharply focused and stated clearly in the introduction of the essay. It should be formulated as a question, not a statement or proposition for discussion.

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Students embarking on a research question for literature and performance should be aware that this is an interdisciplinary course. The research question and angle of investigation must involve the relationship between a written text and its adaptation into a performative piece. The adaptation may take many forms: theatre, film, dance, opera and even video games.

Students are expected to explore a question about the nature of the original text and the ways in which it is remediated as performance. The essay should present a clear argument based on the student's view of the transformative process. The angle of analysis should be made clear from the outset of the EE and subsequent development should stay within this critical frame.

Students should not take on too wide or complex an enterprise, such as two very different transformations of a text. The text itself needs to receive ample critical attention so that the analysis of the performative aspect is well grounded.

Criterion B: Knowledge and understanding

(Strands: Context, Subject-specific terminology and concepts)

Context needs to be a part of the investigation, both that of the original text and of the adaptation. Students will need to carry out background research to ensure that their analysis of text and adaptation is located in time and place.

Students need to display a solid grasp of the text as well as the choices made in the process of adaptation and their outcome. The last element, the effect, is often the best cue as to the student's knowledge and understanding of the materials involved in the transformation.

Students must demonstrate an understanding and knowledge of both literature and performance. They should also address some of the theoretical models governing the adaptation.

Students should use terminology appropriate to both modes of delivery throughout the essay.

Criterion C: Critical thinking

(Strands: Research, Analysis and Discussion and evaluation)

Students should make the angle of analysis clear from the outset of the EE and subsequent development should stay within this critical frame. One measure of success in critical thinking will be the actual choice of the two forms: first the text, and then the adaptation that is paired with it. The student will need to display some initiative in these choices, as well as provide a critical examination that validates them.

The student will need to be well grounded in a careful reading and viewing. They should be ready to give a good account of the text itself with analysis appropriate to its genre. They must also bring some skills in terminology and analysis to the adaptation, addressing its conventions and its delivery.

Students should use critical perspectives and secondary source materials judiciously. They must take care in selecting and using these, so that they do not overshadow their own critical insights.

Criterion D: Presentation

(Strands: Structure, Layout)

This criterion relates to the extent to which the essay conforms to accepted academic standards in relation to how research papers should be presented. It also relates to how well these elements support the reading, understanding and evaluation of the essay.

Generally, the essay should be presented as a continuous text. However, given the EE's interdisciplinary nature and dual focus (the text and the transformation of the text) students may opt to give it a sections and sub-sections structure, with informative sub-headings, if this seems appropriate. The sub-headings should not distract from the overall structure of the essay or argument presented.

Any charts, images or tables from literature sources included in the EE must be carefully selected and labelled. They should only be used if they:

- are directly relevant to the research question
- contribute towards the understanding of the argument
- are of a good graphic quality.

Students must take care in their use of appendices as examiners are not required to read them. All information with direct relevance to the analysis, discussion and evaluation of the EE must be contained in the main body of the essay.

Any material that is not original must be carefully acknowledged, with specific attention paid to the acknowledgment and referencing of quotes and ideas. This acknowledgment and referencing is applicable to audio-visual material, text, graphs and data published in print and electronic sources. If the referencing does not meet the minimum standard as indicated in the guide (name of author, date of publication, title of source and page numbers as applicable), and is not consistently applied, work will be considered as a case of possible academic misconduct.

A bibliography is essential and has to be presented in a standard format. Title page, table of contents, page numbers, etc must contribute to the quality of presentation.

The essay must not exceed 4,000 words of narrative. Other visual materials are not included in the word count. Students should be aware that examiners will not read beyond the 4,000-word limit, nor assess any material presented thereafter.

Criterion E: Engagement

(Strands: Reflections on planning and progress)

This criterion assesses the student's engagement with their research focus and the research process. It will be applied by the examiner at the end of the assessment of the essay, after considering the student's *Reflections on planning and progress Form* (RPPF).

Students are expected to provide reflections on the decision-making and planning process undertaken in completing the essay. Students must demonstrate how they arrived at a topic as well as the methods and approach used. This criterion assesses the extent to which a student has evidenced the rationale for decisions made throughout the planning process and the skills and understandings developed.

For example, students may reflect on:

- the approach and strategies they chose, and their relative success
- the *Approaches to learning* skills they have developed and their effect on the student as a learner
- how their conceptual understandings have developed or changed as a result of their research
- setbacks they faced in their research and how they overcame these
- questions that emerged as a result of their research
- what they would do differently if they were to undertake the research again.

Effective reflection highlights the journey the student has engaged in through the EE process. Students must show evidence of critical and reflective thinking that goes beyond simply describing the procedures that have been followed.

The reflections must provide the examiner with an insight into **student** thinking, creativity and originality within the research process. The **student** voice must be clearly present and demonstrate the learning that has taken place.

World Studies: Subject-specific guidance

See also: *Extended essay guide* and *Extended essay teacher support material*

Overview

An EE in world studies gives students an opportunity to undertake an interdisciplinary study of an issue of contemporary global significance.

Interdisciplinary in this context means research that draws on the methods, concepts and theories of two IB Diploma Programme subjects.

Students are required to

- identify an issue of global importance
- identify a local manifestation of the issue of global importance
- develop a clear rationale for taking an interdisciplinary approach and use the conceptual framework and vocabulary of two Diploma Programme subjects.

This provides an opportunity for students to conduct independent interdisciplinary research (not necessarily primary research) that draws on Diploma Programme subjects and integrates them to produce a coherent and insightful analysis of the global issue they choose to investigate.

It should be noted that law and education are not Diploma Programme subjects.

World studies EEs are registered in one of six areas of study: these are not the same as the Diploma Programme subjects. They are:

- conflict, peace and security
- culture, language and identity
- environmental and/or economic sustainability
- equality and inequality
- health and development
- science, technology and society.

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 two chosen subjects
- develop research and communication skills—including the ability to communicate with readers who have a background in more than one subject or 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 or challenge one another when used to address the same topic or issue.

Furthermore, in line with the IB's mission, the world studies EE seeks to advance students' emerging global consciousness. This comprises:

- a sensitivity to local phenomena as manifestations of broader developments on the planet
- the capacity to think in flexible and informed ways in understanding issues of global significance
- a developing perception of the student's own identity (self) as a global actor and member of humanity, capable of making a positive contribution to the world.

Choice of topic

Many topics are potentially suitable for a world studies EE. The chosen topic must:

- address an issue of global significance
- invite an interdisciplinary approach.

The most successful topics reveal connections between specific 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 subjects.

When choosing a topic, students should remember that it must encourage analysis and evaluation rather than description, unsupported generalizations and value judgments.

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

Examples of topics

These examples are just for guidance. Students must ensure their choice of topic is focused (left-hand column) rather than broad (right-hand column).

Focused topics	Broad topics
The sustainability of high-speed rail travel in China: the case of the Beijing–Tianjin high-speed railway line	Sustainability and rail travel
How street art helped to transform black South African communities during apartheid	Theatre and disadvantaged communities
An examination of the extent to which subsistence farmers in the Himalayan foothills are influenced by short-term economic motivations and long-term environmental sustainability in determining their farming practices	Subsistence farming in the Himalayas
The extent to which the policies of the Thai government have prohibited the Karen ethnic	Government policies that lead to inequality

Focused topics	Broad topics
group from progressing alongside the rest of Thai society	

Students may use journalistic or visual material, interviews or data from the internet, but their EEs should not be based solely on such sources. Students should display a knowledge and understanding of relevant theories, research methods or findings in the selected Diploma Programme subjects.

Treatment of the topic

Students should craft a specific research question that is:

- interesting to them
- challenging
- sufficiently narrow to allow them to examine an issue in depth
- manageable within 4,000 words.

The question should also require the student to collect or generate information and/or data for analysis and evaluation.

Local case study

The local case study can have a number of functions:

- It may illustrate a local manifestation of the issues of global importance.
- It may offer an opportunity to explore the complexities of the issue in a manageable way.
- It may document "best practices" and offer lessons beyond the local focus.

Occasionally, students may choose to compare two local manifestations or examples from different contexts.

Subject knowledge

It is expected that students will have a good grounding in at least one of the Diploma Programme subjects used in the EE.

If they are unfamiliar with a discipline used, they must access its syllabus so that they can identify the concepts, terminology and modes of thinking required for their EE. (Many IB syllabuses contain lists of key concepts.)

The student's supervisor should be 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 specialists available in the school, students are encouraged to consult them about research, concepts and approaches.

However, each student must only have one main supervisor who takes on the role as outlined in the introduction to this guide.

Researcher's reflection space

The researcher's reflection space (RRS) is strongly recommended as part of the world studies EE process. It provides a space for candid reflection on the issue being studied and how it relates to a student's own world view, values and aspirations as global citizens.

The RRS gives students an opportunity to reflect on their work and its progress and reversals 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
- reflect upon interviews, data and emerging findings.

Most importantly, it is a space where students can reflect candidly upon their own views and lifestyles, feelings, values, aspirations and commitments as global citizens in relation to the topic under study.

The world studies EE offers an opportunity for students to develop their global consciousness. The RRS 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 RRS exhibit students' ongoing realization and reflection upon who they are as local, regional and global actors.

The RRS 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 are also encouraged to include selected pages from their RRS in the appendix of their EE. Supervisors should refer to the shared sections of this space when they complete the supervisor's report on the EE coversheet. These comments help examiners when they consider the assessment of criterion E: engagement.

It is intended that a well-planned RRS should arise naturally out of the research process and should not involve any extra work.

Before providing examples of typical world studies EE layouts for guidance, it is worth considering some pitfalls to avoid. These include essays that:

- rely on basic information from the internet and everyday common sense rather than employing concepts, theories and findings from Diploma Programme subjects
- merely juxtapose theories, methods and findings from different subjects without any attempt to show how they come together to address the topic in a new or compelling way
- do not make clear the underlying Diploma Programme subjects or justify the subjects chosen

- do not give a strong sense of why the inquiry is important and how it links with a global issue but merely offer a description of the problem under study
- define the problem too broadly, given the 4,000-word limit for the essay, and therefore offer a superficial account.

The examples of world studies EEs below are intended as guidance only. They illustrate that multifaceted questions should be encouraged rather than broad ones.

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.

Topic	**Culture, language and identity: music as an expression of political dissent**
Research question	To what extent can music be used as a method of political expression against oppressive regimes: a comparison of Shostakovich's work (1932–45) under Joseph Stalin's regime with Malek Jandali's work (2000–) under Bashar al-Assad's regime.
Approach	By analysing nine musical parameters of two composers as expressions of dissent under repressive regimes in different historical eras, and the contexts in which they were written and their reception, the student draws meaningful comparisons and contrasts using the skills of the historian and those of musical notation.

Topic	**Health and development: multiple sclerosis and latitude**
Research question	To what extent do geographical factors play a role in the distribution of multiple sclerosis cases in Canada and Iran?
Approach	The essay challenges the suggested theory that MS is associated with high latitudes by looking at recent studies of Iran. Genetic factors and vitamin deficiency (biology), migration and environment (geography) are evaluated to enhance understanding

Topic	**Health and development: economic growth and obesity**
Research question	How has globalization contributed to dietary changes and obesity in developed and developing countries?
Approach	The essay considers metabolic systems and the role of the endocrine system (biology) and recent qualitative and quantitative changes in diet in Liberia, Brazil and the USA to measure energy imbalance and a nutrition transition resulting from globalization (geography/economics).

An important note on “double-dipping”

Students must ensure that their EE does not duplicate other work they are submitting for the Diploma Programme. For example, any data, material or research used in the submission of an assessment task for another subject must not be used in the completion of a world studies EE.

Supervisors play an important role in guiding students in this. Students risk their diploma if academic misconduct is detected.

Interpreting the EE assessment criteria

Criterion A: Focus and method

(Strands: Topic, Research question, Methodology)

In terms of the choice of topic, the research question must be specific and sharply focused and stated clearly in the introduction of the essay. It should be formulated as a question, not a statement or proposition for discussion.

The student should identify an issue (topic) of global significance and examine it through one or more local manifestations.

The significance and importance of the global issue must be established in the introduction (this might take rather longer than in other subjects).

In this way the issue is accurately and effectively communicated.

The research question should appropriately connect the global issue to the local manifestation. Early in the essay, students should:

- explain or justify their research question
- identify the IB academic disciplines and appropriate key concepts they are going to use
- explain why the research question requires an interdisciplinary approach and indicate the benefits of an integrative approach
- highlight the materials, sources, data and evidence from the two subjects they will be using, with some explanation of why they have been chosen.

Students must show clearly that they have chosen a suitable range of relevant sources. These could be primary or secondary.

Primary sources include:

- works of art
- film
- music
- interviews
- self-generated survey data
- reports of experiments.

Secondary sources should be capable of conveying academic context or be susceptible to academic evaluation, though journalistic, online and media sources are permitted.

Students' sources must provide sufficient evidence to develop and support arguments that are relevant to the research question.

Criterion B: Knowledge and understanding

(Strands: Context, Subject-specific terminology and concepts)

Students should select concepts, theories, perspectives, findings or examples from two Diploma Programme subjects. They need to demonstrate a sound grasp of:

- the knowledge bases of the different subjects
- modes of understanding of the different subjects
- methods of communication of the different subjects.

Students should demonstrate familiarity with the terminology and usages of the subjects. They should place the issue in academic context and where possible 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 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.

Students should show that they understand the conceptual framework of both subjects, even of one they are not studying for the Diploma Programme. For example, if a student is using history to explore an issue, they must use the skills of the historian such as establishing causation, partiality, reliability of sources etc. Simple narrative is never enough.

Use of language must be effective and include terminology and concepts relevant to the issue and subjects under study. Students should define contested or ambiguous terms when necessary. The essay should be accessible and acceptable to audiences from the different subjects being integrated.

Criterion C: Critical thinking

(Strands: Research, Analysis and Discussion and evaluation)

Research can incorporate the methodologies of the two subjects chosen, such as:

- experimental laboratory work
- library and online research
- generation of primary data through questionnaires
- or many others.

Research should be undertaken with the same integrity as within individual subjects. It must be relevant to the research question. Students should address the value and limitations of research materials.

Students should analyse and evaluate their evidence in a manner appropriate to the research question and the Diploma Programme subjects employed in the essay.

Students should present their ideas in the form of a logical and coherent argument that is relevant to the research question. The argument 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.

Successful interdisciplinary essays 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.

At the highest level, students should demonstrate:

- effective and nuanced analysis and evaluation of information and findings
- evaluation of the success and limitations of their own integrative approach to the issue.

In a world studies EE there is an element of risk: it may be that evaluation of the findings of a two-subject approach leads to new and original conclusions, or that conclusions are uncertain, or that it is not possible to make conclusions. Failure to integrate the two subjects' analyses into the conclusion or to reach a firm conclusion will not prevent the award of high marks: no news is still news so long as it is true to the research question. Indeed, such outcomes can be used to review opportunities for further research and research lessons learned.

Criterion D: Presentation

(Strands: Structure, Layout)

This criterion assesses the extent to which the presentation follows the standard format expected for academic writing and the extent to which this aids effective communication.

Students may provide a section and sub-section structure to their essays, with informative headings, if appropriate to the topic of the essay. sub-headings should not distract from the overall structure of the essay.

Use of charts, images and tables

Any charts, images or tables from literature sources included in the essay must be carefully selected and labelled. They should only be used if they:

- are directly relevant to the research question
- contribute towards the understanding of the argument
- are of a good graphic quality.

Large tables of raw data collected by the student are best included in an appendix, where they should be carefully labelled. It is not necessary to include all responses to questionnaires; a single sample is sufficient. Tables of processed data should be designed to clearly display the information in the most appropriate form. Graphs or charts drawn from the analysed data should be selected to highlight only the most pertinent aspects related to the argument. Too many graphs, charts and tables will detract from the overall quality of the communication.

Only 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. The inclusion of non-relevant or superfluous material will not be rewarded and may actually detract from the argument.

Any tables should enhance a written explanation and should not themselves include significant bodies of text. If they do, then these words must be included in the word count.

Students must take care in their use of appendices as examiners are not required to read them.

All information with direct relevance to the analysis, discussion and evaluation of the essay must be contained in the main body of the essay.

The RRS is a particularly valuable aspect first included in the world studies EE. While reflection is incorporated in assessment through the *Reflections on planning and progress Form*, it is strongly recommended that students record the EE journey and feel free to submit a sample from the RRS in the appendix. It will provide benefits in preparing for reflection sessions, decision-making and the analysis and evaluation elements of the EE.

Any material that is not original must be carefully acknowledged, with specific attention paid to the acknowledgment and referencing of quotes and ideas. This acknowledgment and referencing is applicable to audio-visual material, text, graphs and data published in print and electronic sources. If the referencing does not meet the minimum standard as indicated in the guide (name of author, date of publication, title of source and page numbers as applicable), and is not consistently applied, work will be considered as a case of possible academic misconduct.

A bibliography is essential and has to be presented in a standard format. Title page, table of contents, page numbers, etc must contribute to the quality of presentation.

The essay must not exceed 4,000 words of narrative. Graphs, figures, calculations, diagrams, formulas and equations are not included in the word count. Students should be aware that examiners will not read beyond the 4,000-word limit, nor assess any material presented thereafter.

Criterion E: Engagement

(Strands: Reflections on planning and progress)

This criterion assesses the student's engagement with their research focus and the research process. It will be applied by the examiner at the end of the assessment of the essay, after considering the student's *Reflections on planning and progress Form* (RPPF).

Students are expected to provide reflections on the decision-making and planning process undertaken in completing the essay. Students must demonstrate how they arrived at a topic as well as the methods and approach used. This criterion assesses the extent to which a student has evidenced the rationale for decisions made throughout the planning process and the skills and understandings developed.

For example, students may reflect on:

- the approach and strategies they chose, and their relative success
- the *Approaches to learning* skills they have developed and their effect on the student as a learner
- how their conceptual understandings have developed or changed as a result of their research
- setbacks they faced in their research and how they overcame these
- questions that emerged as a result of their research
- what they would do differently if they were to undertake the research again.

Effective reflection highlights the journey the student has engaged in through the EE process. Students must show evidence of critical and reflective thinking that goes beyond simply describing the procedures that have been followed.

The reflections must provide the examiner with an insight into **student** thinking, creativity and originality within the research process. The **student** voice must be clearly present and demonstrate the learning that has taken place.