# Fostering interdisciplinary teaching and learning in the MYP

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International Baccalaureate®
Baccalauréat International
Bachillerato Internacional

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**Middle Years Programme**

**Fostering interdisciplinary teaching and learning in the MYP**

# 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.**

# Contents

# About this guide

*Fostering interdisciplinary teaching and learning in the MYP* (August 2014) complements *MYP guide to interdisciplinary teaching and learning* (May 2010). The Middle Years Programme (MYP) philosophy of interdisciplinary teaching and learning remains unchanged. This guide builds on an established theoretical basis that is further informed by practice in a variety of IB World Schools.

*Fostering interdisciplinary teaching and learning in the MYP* guides schools and teachers in their efforts to structure meaningful interdisciplinary inquiry: planning, teaching and assessing interdisciplinary units. This guide needs to be used in combination with the teacher support material (TSM) for interdisciplinary teaching and learning. Like MYP subject-group guides, this guide presents specific aims, objectives and criteria for assessing interdisciplinary units. The guide also presents and explains an interdisciplinary version of the MYP unit planner.

## Acknowledgments

The IB gratefully acknowledges the generous contributions of IB World Schools and a global community of educators who collaborate in the development of the MYP. Special thanks are due to Veronica Boix-Mansilla for her theoretical and empirical contributions to the *Interdisciplinary teaching and learning in the MYP* guide (2010) that greatly informed this document.

# Importance of interdisciplinary teaching and learning

One of the key features of the MYP is its emphasis on interdisciplinary teaching and learning. This trait emerges as a consequence of the challenges and opportunities of educating students in, and for, a complex and highly interconnected world. Younger learners often make connections naturally between knowledge domains in order to understand the world around them—in some cases, because they have not yet been socialized into the disciplinary perspectives that organize the academic world. Even though secondary education usefully organizes learning into disciplinary compartments (as a response to increasing specialization), an ever-changing world also demands education that empowers people to integrate disciplines in novel and creative ways. As knowledge and information multiply, critical thinkers must successfully integrate disciplinary perspectives to understand complex issues and ideas.

Meaningful interdisciplinary teaching and learning experiences can have positive effects on students, teachers and learning environments. Interdisciplinary teaching and learning:

| Benefits for students | • allows students to use knowledge domains creatively to foster new understanding |
|---|---|
| | • develops mental flexibility that prepares students to be lifelong learners |
| | • promotes intellectual rigour by providing a holistic approach to the study of complex issues and ideas |
| | • models the importance of collaboration and teamwork across disciplines (an important life skill) |
| | • supports and promotes transfer of understanding. |
| Benefits for teachers | • develops holistic understanding of disciplinary concepts and contexts |
| | • increases collaboration across subject groups and fosters collegiality |
| | • allows subject groups to share responsibility for developing content, skills and processes (managing time effectively) |
| | • offers opportunities for rich and authentic professional development with colleagues from other disciplines or subject groups. |

# Characteristics of interdisciplinary learning in the MYP

In the MYP, interdisciplinary learning is the process by which students come to understand bodies of knowledge and ways of knowing from two or more disciplines or subject groups and integrate them to create new understanding.

Students demonstrate interdisciplinary understanding when they can bring together concepts, methods, or forms of communication from two or more disciplines or established areas of expertise to explain a phenomenon, solve a problem, create a product, or raise a new question in ways that would have been unlikely through a single discipline (Boix Mansilla 2010).
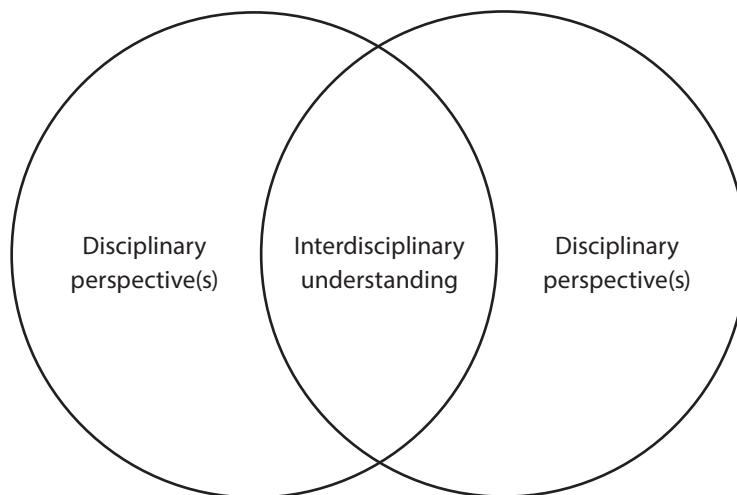


**Figure 1**
*Interdisciplinary understanding*

Three key qualities of interdisciplinary understanding follow from this definition. In the MYP, interdisciplinary learning is:
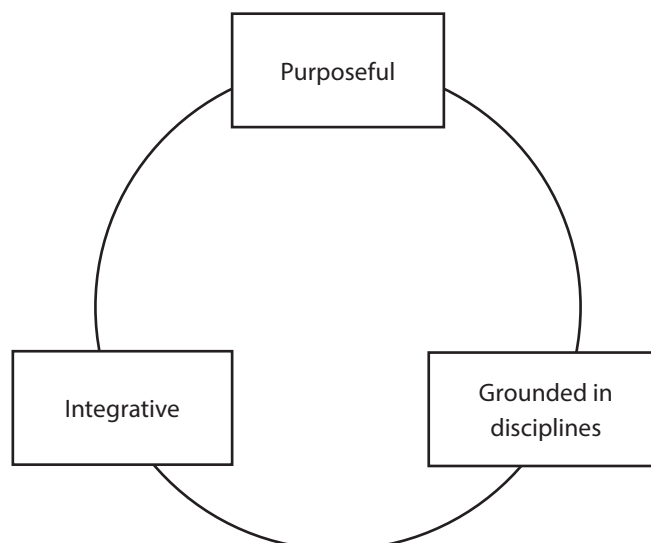


**Figure 2**
*Key qualities of interdisciplinary learning*

# Interdisciplinary learning is purposeful

In effective interdisciplinary learning, the integration of disciplinary perspectives or subject areas is **purposeful**. Integrating disciplinary perspectives is not a goal in itself but rather a means to deepen students' understanding of their world and support them in becoming more competent in it. Interdisciplinarity is "a path to take when we are confronted with phenomena that cannot be understood from one or another discipline alone, and only yield their secrets and fascinations when approached with new tools and from new perspectives that derive their methods from more than one discipline" (Rényi 2000: 41).

Interdisciplinary learning in the MYP seeks to:

- place inquiry within broader global contexts

- enrich student understanding of topics, artefacts or problems that they, their teachers, schools and communities find compelling

- respond to a clear aim for which perspectives must be brought together (solve a problem, create a product, build an explanation, address a need).

When interdisciplinary learning efforts do not have a clearly articulated purpose, contrived connections and fragmented learning are more likely to occur.

# Interdisciplinary learning is grounded in the disciplines

Interdisciplinary learning is deeply **grounded in the disciplines** represented within the MYP subject groups (for example, biology, physics and chemistry in the sciences; drama, visual art and music in the arts). Interdisciplinary teaching and learning does not replace MYP subject groups; rather, it selects and reorganizes disciplinary objectives in meaningful and connected ways. Thus, disciplinary learning is not implicit in interdisciplinary projects, but rather explicitly taught and assessed. "Attempts to integrate curricula that disregard disciplinary cultures will, perforce, result in superficial programs that do justice to neither discipline" (Wineburg and Grossman 2000: 58).

Students exhibit interdisciplinary understanding when they:

- apply knowledge, concepts, findings, strategies, tools, methods of inquiry, ways of knowing, or forms of communication in specific disciplines (as framed in subject-group objectives)

- employ disciplinary understanding that moves towards the sophistication of subject matter experts (avoiding misconceptions or oversimplifications).

**Disciplinary grounding** of student work is an essential feature of the MYP interdisciplinary approach where learning across disciplines and subject groups builds on disciplinary learning.

# Interdisciplinary learning is integrative

Although mastering selected concepts and skills in two or more disciplines is necessary to promote interdisciplinary learning, it is not sufficient. Interdisciplinary learning requires that teachers and students **integrate** disciplinary perspectives and that they do so deliberately and productively. In effective interdisciplinary learning, disciplines are not merely juxtaposed around a "theme", neither are disciplinary connections made haphazardly. Rather, elements of more than one discipline are placed into a productive relationship with one another—and connections considered over time—so that students can develop a new, deeper, more compelling or nuanced understanding of the topic under study.

**Integration** is at the heart of interdisciplinary work. In multidisciplinary or thematic approaches to learning, students examine a topic through distinct disciplinary perspectives but do not seek to make connections across them. In the MYP, students are encouraged to bring together knowledge, understanding, skills and attitudes learned in different disciplines or subject groups to deepen and enrich their understanding.

# Curriculum integration in the MYP

The programme model of the MYP places the learner at its centre. This underscores the IB's belief in educating the whole person, and places importance on student inquiry. The eight subject groups ensure a balanced and varied learning experience. Each subject group has its disciplinary foundations and its own shared methodologies and perspectives. Approaches to teaching and learning, concepts and global contexts are reflected as central elements of the programme that guarantee a "common language" for all subject groups and enable interdisciplinary connections across disciplines. They establish meaningful connections between what students learn inside the classroom and the world beyond. Contexts and concepts are essential components for promoting holistic learning.



**Figure 3**
*MYP programme model*

The MYP is designed to help students develop disciplinary and interdisciplinary understanding through independent courses in each subject group in each year of the programme. Schools can structure interdisciplinary learning using multiple strategies.

# Integrated courses

Integrated courses blend knowledge from multiple disciplines within the subject group into a sustained period of learning that approaches a subject holistically. The MYP formally recognizes integrated courses in:

- sciences (including biology, chemistry and physics)

- humanities (including economics, geography and history)

- design (including digital design and product design)

- performing arts (including music, drama and/or dance)

- visual arts (including visual art and media).

Subject-group guides provide additional information about options for integrating specific disciplines into recognized MYP courses.

In schools, teachers can collaboratively develop courses that combine disciplines across subject groups. These authentically integrated courses must continue to:

- meet programme requirements for minimum teaching hours in each subject group

- allow students to reach the highest achievement levels in all subject-group objectives

- report student achievement against all subject-group criteria.

# Combined subject groups

If local circumstances impose scheduling constraints, which prevent the programme model's implementation, schools may combine subject groups in MYP years 1–3, provided certain conditions are met as explained in *MYP: From principles into practice* (May 2014). Courses in which subject groups are combined can develop an exclusively intermittent or modular approach, but they can also offer important opportunities for developing interdisciplinary understanding.

It should be noted that this arrangement is designed as an exception for schools where a genuine need exists due to unavoidable scheduling constraints. In MYP years 4–5 schools have the possibility of implementing subject-group flexibility in order to meet local requirements or individual student needs.

> In each year of the programme, MYP schools are responsible for engaging students in at least one collaboratively planned interdisciplinary unit that involves at least two subject groups.
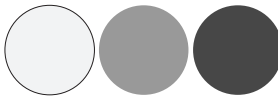
# Connected curriculum across IB programmes

James A Beane (1995) invited educators to think of students' curricular experiences through the metaphor of a jigsaw puzzle, in the sense that often students move from one course to another to be confronted with disassociated and unconnected facts or activities that lack relevance or meaning to them. In traditional educational models, meaningful interconnections between and across disciplines are scarce, resulting in students lacking a sense of purpose or coherence in their schooling experience. Nevertheless, the existence of subjects based on disciplines is not arbitrary as disciplines consist of very real identifiable epistemological and social entities. As Rényi (2000: 41) has pointed out, "rocks, trees, poems and kinships differ" remarkably, and disciplines allow people to represent and comprehend the complexity of human and natural life.
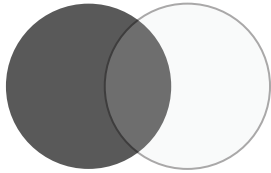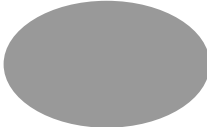
IB programme standards and practices promote collaborative planning so that students can make connections across courses and integrate their learning with previous experiences in a coherent way. All IB programmes offer a broad and balanced, conceptual and **connected** curriculum that articulates and links disciplinary domains, which can sometimes be presented as distinct or even incompatible.

Education professionals use a variety of terms to describe how curriculum planning connects academic disciplines. While these terms are sometimes difficult to distinguish, they imply different approaches to teaching and learning that can be described as:

- multidisciplinary
- interdisciplinary
- transdisciplinary.

The table below highlights the difference between these three approaches. While in multidisciplinary approaches disciplines are juxtaposed with one another, interdisciplinary teaching implies integration (Boix-Mansilla, Miller and Gardner 2000). While interdisciplinary teaching and learning is present both in the MYP and the Diploma Programme (DP), the Primary Years Programme (PYP) is based on a transdisciplinary approach.

| Term | Definition | Examples | Visual representation |
|---|---|---|---|
| Multidisciplinary | Working with multiple disciplines, maintaining boundaries<br><br>Multiple but distinct disciplinary perspectives that explore a topic, issue or idea (concurrent or sequential) | Traffic safety council (automobile engineers, city planners, psychologists)<br><br>Comparative MYP study of classical civilizations: legal institutions (history), number systems (mathematics), and discoveries (sciences) | Perspectives on a topic, issue or idea |

| Term | Definition | Examples | Visual representation |
|---|---|---|---|
| Interdisciplinary | Working between more than one discipline, blurring boundaries<br><br>Interaction among disciplines to achieve new, integrated understanding | Informatics (social sciences and information technology)<br><br>MYP unit that explores opportunities for principled action in response to climate change (geography and design) | Integrated understanding |
| Transdisciplinary | Working across and beyond disciplines, eliminating boundaries<br><br>Transcends the confines of disciplines to explore an issue using a shared approach for inquiry | Hospital patient well-being team<br><br>A PYP unit of inquiry into the theme "Who we are" | Transdisciplinary theme |

**Table 1**
*Approach to connected curriculum*

The MYP is flexible enough to accommodate the demands of most national or local curriculum requirements. It builds upon the knowledge, skills and attitudes developed in the PYP and prepares students to meet the academic challenges of the DP and IB Career-related Certificate (IBCC).

# Connected curriculum in the PYP: Transdisciplinary learning

One of the key components of the PYP is transdisciplinary teaching and learning. The programme defines transdisciplinary themes that identify areas of shared human experience and have meaning for individuals from different cultures and ethnicities. "The preferred term to describe the PYP is transdisciplinary and in this context the meaning of the prefix 'trans' is two-fold: to convey learning that has relevance across the subject areas and more importantly, learning that transcends the confines of the subject areas to connect to what is real in the world" (*The Primary Years Programme as a model of transdisciplinary learning* 2010: 1).

Even though it is sometimes difficult to clearly distinguish between transdisciplinary and interdisciplinary understanding, the key difference between the two approaches lies in the fundamental components of the learning and the role of disciplinary expertise. In the PYP the starting point is the transdisciplinary themes, the central ideas and concepts. While transdisciplinary units might relate to disciplinary knowledge, they are not grounded in it. In the MYP, even though the entry point to a unit could be a concept or a context, teachers start from the subject groups (and disciplines); units are always grounded in the disciplines and then integrated in meaningful ways. The choice of a transdisciplinary approach over others in the PYP is rooted in the nature of the curriculum, human development and the organization of primary schools, which is often articulated around a year level classroom with one teacher who draws on several disciplinary tools to explore relevant themes.

Within the IB continuum of education disciplinary learning takes many forms and these complement each other and reflect the aims of the programmes at different age levels. As students become older, the curriculum becomes increasingly more disciplinary in nature.

While it might be beneficial for students to have participated in the PYP, it is not necessary for students to have previously followed the PYP in order to participate in the MYP.

# Connected curriculum in the DP

The DP is primarily discipline-based, as the programme is structured around academic disciplines, which provide theoretical and methodological frameworks that students learn to understand and use. However, concurrency of learning, which is a vital organizational component of the MYP and DP, provides one important means of supporting interdisciplinary learning. Additionally, teachers and students find several opportunities to foster interdisciplinary understanding.

A key way that students make connections between their individual subject disciplines is through the study of the DP theory of knowledge (TOK) course. The TOK course plays a special role in the DP by providing an opportunity for students to reflect on the nature of knowledge, and to make connections between different areas of knowledge. In this way, students become more aware of their own perspectives and those of the various groups whose knowledge they share. TOK supports the development of interdisciplinary understanding by providing a forum for discussion of questions about the nature of knowledge and the similarities and differences in the ways that knowledge is gained in different disciplines. Links to TOK are identified in all DP subject guides, and all DP teachers are encouraged to help students to identify TOK knowledge questions in their subject lessons.

The DP also provides students with the possibility of undertaking a world studies extended essay that invites students to conduct an in-depth, **interdisciplinary** investigation into an issue of contemporary global importance. Through the selection of complex global issues, students are required to bring aspects of different disciplines together and synthesize them to advance understanding.

Finally, the DP offers students the possibility to enroll in interdisciplinary courses—environmental systems and societies (ESS), and literature and performance. ESS is an interdisciplinary course between individuals and societies, and sciences, which seeks to enable students to explore the interrelationship between ESS through the evaluation of the scientific, ethical and sociopolitical aspects of environmental issues/problems. The literature and performance course is an interdisciplinary synthesis of language and literature and theatre. It incorporates essential elements of literature and performance, and aims to explore the dynamic relationship between the two.

# Connected curriculum in the IBCC

The IBCC is an innovative education framework for students aged 16 to 19 incorporating the vision and educational principles of the IB into a unique programme specifically tailored for students who wish to engage in career-related learning. The IBCC core comprises approaches to learning (ATL), a reflective project, language development and community and service. ATL and career-related courses in the IBCC enable students to build understanding across traditional academic subjects connected to their career paths.

| PYP | MYP | IBCC | DP |
|---|---|---|---|
| (3–11 years old) | (11–16 years old) | (16–19 years old) | |
| Transdisciplinary | Disciplinary and Interdisciplinary | Disciplinary and Interdisciplinary | Disciplinary and Interdisciplinary |
| Six subject areas<br><br>Six transdisciplinary themes<br><br>• Who we are<br>• Where we are in place and time<br>• How we express ourselves<br>• How the world works<br>• How we organize ourselves<br>• Sharing the planet | Eight subject groups integrated through key concepts, global contexts and approaches to learning<br><br>The MYP community project and personal project also provide opportunities to develop interdisciplinary understanding | Core elements, DP courses and career studies | Disciplinary study supported by the DP core, including the world studies extended essay, TOK and specific interdisciplinary courses |

**Table 2**
*Connected curriculum in IB programmes*

# Aims and objectives

## Aims

The MYP interdisciplinary teaching and learning aims state what a teacher may expect to teach and what a student may expect to experience and learn as a result of undertaking interdisciplinary units. These aims, moreover, suggest how the student may be changed by the learning experience.

The aims of the teaching and study of MYP interdisciplinary units are to encourage students to:

- develop a deeper understanding of learning skills and apply them in meaningful contexts
- integrate conceptual learning, ways of knowing, and methods of inquiring from multiple disciplines
- inquire into compelling issues, ideas and challenges by creating products or explaining phenomena
- reflect on and communicate understanding of the interdisciplinary learning process
- experience the excitement of intellectual discovery—including insights into how disciplines complement and challenge one another.

## Objectives

The MYP interdisciplinary objectives state the specific targets that are set for interdisciplinary learning. They define what the student will be able to accomplish as a result of undertaking interdisciplinary units at the end of the programme in year 5, year 3 and year 1.

These objectives relate directly to the assessment criteria found in the "Progression in interdisciplinary learning" section of this guide. These objectives support the development of the ATL skills.

### A    Disciplinary grounding

In interdisciplinary units, disciplinary understanding is explicitly taught and assessed. Students must understand concepts and skills of the selected disciplines—as framed in subject-group objectives. This disciplinary grounding provides the foundation for interdisciplinary understanding.

At the end of the programme, students should be able to:

- demonstrate relevant disciplinary factual, conceptual and/or procedural knowledge.

### B    Synthesizing

Through the development of holistic learning students will integrate knowledge from more than one discipline in ways that inform inquiry into relevant ideas, issues and challenges. Students demonstrate the integration of factual, conceptual and procedural knowledge from more than one discipline in order to explain phenomena or create products.

At the end of the programme, students should be able to:

- synthesize disciplinary knowledge to demonstrate interdisciplinary understanding.

## C   Communicating

Interdisciplinary learning helps to prepare students for communicating understandings across areas of expertise. By selecting, integrating or innovating communication forms and strategies, students describe and explain the results of their inquiries. Students develop the capacity to communicate effectively and responsibly with a range of audiences.

At the end of the programme, students should be able to:

• use appropriate strategies to communicate interdisciplinary understanding effectively

• document sources using recognized conventions.

## D   Reflecting

When undertaking units of interdisciplinary learning, students will engage in a process of ongoing reflection and evaluation of the role of disciplines, weighing their relative contributions and assessing their strengths and limitations in specific interdisciplinary applications. Students will also explore various areas of knowledge and ways of knowing, considering their own ability to construct understanding across disciplinary boundaries.

At the end of the programme, students should be able to:

• reflect on the development of their own interdisciplinary understanding

• evaluate the benefits and limitations of disciplinary and interdisciplinary knowledge and ways of knowing in specific situations.

# Visualizing the interdisciplinary objectives
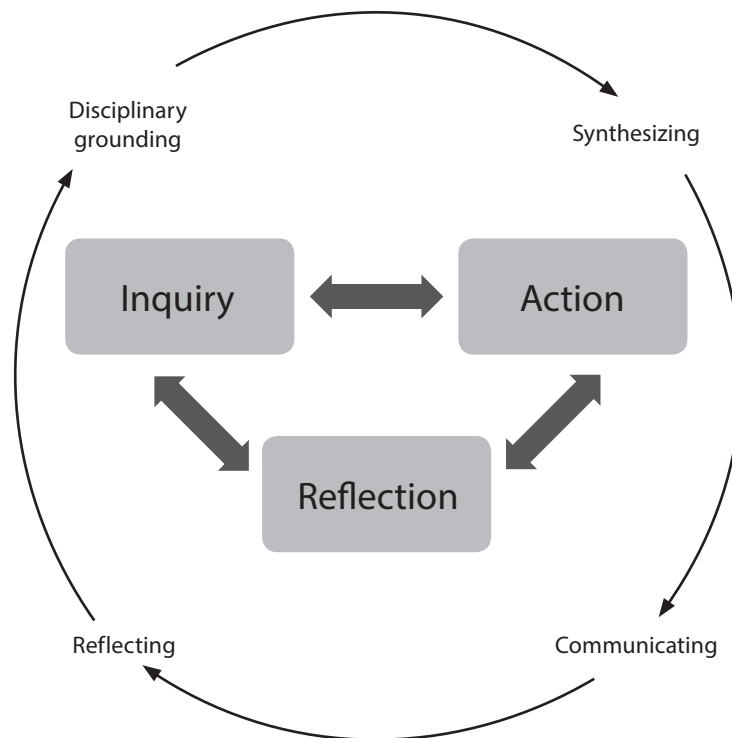


**Figure 4**
*The MYP interdisciplinary objectives*

The visual representation of MYP interdisciplinary objectives (figure 4) indicates how the objectives can be used when collaboratively planning formal interdisciplinary units, and illustrates their close connection with the inquiry cycle that characterizes teaching and learning in IB programmes.

The four objectives for interdisciplinary learning work together in a holistic process that envisions students engaging all four criteria in every formal interdisciplinary unit. In practice, teachers may highlight specific objectives for some units in order to develop students' skills and provide formative feedback for subsequent, more complex units. Especially for students in MYP years 1–3, it may be appropriate to introduce criteria separately to allow for a specific focus on one of the objectives in a given unit. Teachers might scaffold the approach to an objective so that their students can reach the highest achievement levels in subsequent units.

Only when all four objectives are addressed in a unit of work are all the aims of interdisciplinary learning met. Working collaboratively, teachers should design holistic summative assessment tasks (performances of understanding), which address multiple objectives whenever possible.

> In each year of the programme, schools must address all four objectives (every strand) of interdisciplinary learning.

# Objectives overview for years 1, 3 and 5

| MYP year 1 Students should be able to: | MYP year 3 Students should be able to: | MYP year 5 Students should be able to: |
|---|---|---|
| **A: Disciplinary grounding** | | |
| • demonstrate relevant disciplinary factual, conceptual and/or procedural knowledge. | • demonstrate relevant disciplinary factual, conceptual and/or procedural knowledge. | • demonstrate relevant disciplinary factual, conceptual and/or procedural knowledge. |
| **B: Synthesizing** | | |
| • synthesize disciplinary knowledge to demonstrate interdisciplinary understanding. | • synthesize disciplinary knowledge to demonstrate interdisciplinary understanding. | • synthesize disciplinary knowledge to demonstrate interdisciplinary understanding. |
| **C: Communicating** | | |
| • use appropriate strategies to communicate interdisciplinary understanding effectively <br> • list sources. | • use appropriate strategies to communicate interdisciplinary understanding effectively <br> • document sources. | • use appropriate strategies to communicate interdisciplinary understanding effectively <br> • document sources using recognized conventions. |
| **D: Reflecting** | | |
| • evaluate strengths and limitations of the interdisciplinary learning process <br> • describe the benefits and limitations of disciplinary and interdisciplinary knowledge in specific situations. | • reflect on themselves as disciplinary and interdisciplinary learners <br> • explain the benefits and limitations of disciplinary and interdisciplinary knowledge in specific situations. | • reflect on the development of their own interdisciplinary understanding <br> • evaluate the benefits and limitations of disciplinary and interdisciplinary knowledge and ways of knowing in specific situations. |

**Table 3**
*Objectives overview*

Throughout the programme, students should engage with the curriculum and be expected to demonstrate their understanding at increasing levels of sophistication. The range of assessed skills, techniques, and concepts, as well as the complexity of their application, must increase as students progress through the programme. Students should become more self-directed in their interdisciplinary inquiry over time.

# A continuum of interdisciplinary learning

Depending on students' preparation and the unit's learning objectives, interdisciplinary teaching can be small-scale (for example, an interdisciplinary thread that runs occasionally through a variety of subject groups), or it can be a large-scale unit or project (Boix Mansilla 2010). Teaching designs vary depending on their purpose and content focus, the selection of disciplines involved, students' developmental characteristics and prior knowledge, as well as the required scope and forms of teacher collaboration. Recognizing this diversity enables teachers to find comfortable opportunities for creative and rigorous interdisciplinary explorations with their colleagues and students.

The MYP proposes that schools understand interdisciplinary curriculum design as a continuum:
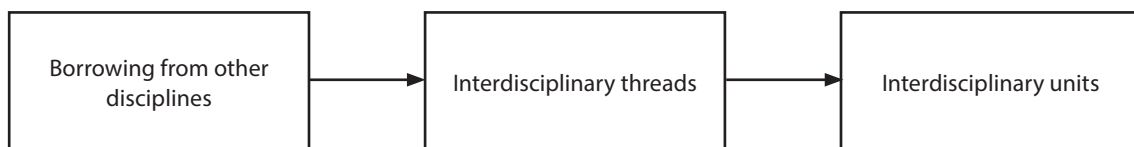


**Figure 5**
*Interdisciplinary learning continuum*

## Borrowing from other disciplines

Frequently, teachers find that bringing knowledge, concepts or skills from another discipline can enrich their students' understanding of the disciplines they teach. For example, a biology teacher may "borrow" selected lessons in still life drawing to further students' capacity to observe during fieldwork. A mathematics teacher may invite students to create fractal computer art with the intention of building the visual thinking necessary to translate functions into two- and three-dimensional spaces. Similarly, a history teacher might draw on statistics or economics to explain the impact of a social crisis in a specific setting. These examples illustrate how courses that are primarily disciplinary can benefit from high-quality, natural forays into neighbouring disciplines.

## Integrating interdisciplinary threads

Other teachers may prefer to weave an interdisciplinary thread throughout their disciplinary courses. For instance, a history teacher may revisit throughout an academic year the question of how monuments, artwork and propaganda use visual symbols to tell stories about many societies, preparing students to create informed historical monuments of their own as a culminating project. A biology teacher may include selected concepts in ethics or moral philosophy to invite students to reflect on human responsibility towards the environment and other species. These threads can be introduced by individual teachers or by colleagues visiting from other disciplines or departments.

# Designing formal interdisciplinary units

Finally, some teachers may dedicate a sizeable unit of work to a topic that demands an interdisciplinary approach. For instance, the study of globalization could invite students to learn to think like economists, sociologists and anthropologists. A unit on how to mitigate and adapt to climate change may need insights from the natural sciences as well as economics, public health and political science. Schools need to dedicate time and effort in collaborative planning when developing formal interdisciplinary units of inquiry. The MYP interdisciplinary planner provides guidance in that process.

# Forms of integration

Teachers can bring disciplines together meaningfully in many ways. By distinguishing various relationships among disciplines, teachers can also anticipate the kinds of activities or performances of understanding that might best support their inquiry. *MYP guide to interdisciplinary teaching and learning* (May 2010) explores six useful strategies that are easily available in any curriculum. (These strategies do not comprise an exclusive list.)

| Form of integration | Description | Example learning experiences |
|---|---|---|
| **Aesthetic or literary synthesis** | Students create an aesthetic or literary interpretation of a non-artistic or non-literary topic or issue, translating disciplinary understanding into a symbolic work that anticipates how viewers make sense of complex ideas. | • Design a short story for children, written in their mother tongue, about first settlers (history and language acquisition).<br>• Create a mask with a computer program to learn geometric concepts (mathematics and visual art).<br>• Create a work of art with recycled material (visual art and individuals and societies). |
| **Personal expression** | Students develop a nuanced and personally meaningful way to express a concept, using domains of performance and understanding from more than one discipline. | • Choreograph and perform an aesthetic movement routine about what it means to be free (physical and health education, dance and civics).<br>• Compose a song about gender stereotypes (language and literature, music). |

| Form of integration | Description | Example learning experiences |
|---|---|---|
| **Cross-over tooling** | Students learn a skill or concept that can be used in multiple disciplines and apply it to understand a new issue or problem. | • Use **statistical analysis** *(*mathematics) to research the relationship between urbanization and poverty (economics) or multiple trials in an experiment (sciences). <br><br>• Follow the **design cycle** (design) to create a bilingual brochure that fosters intercultural understanding in the community (language acquisition) or promotes community well-being (physical and health education). <br><br>• Implement **observational techniques** (arts) to analyse living organisms (sciences) or visual texts (language and literature). |
| **Complex explanation** | Students draw on expertise from more than one discipline to develop a more complete or complex understanding of a phenomenon. | • Understand the causes of contamination of a local body of water (biology, chemistry, economics and geography). |
| **Contextualization** | Students situate a particular concept, issue or problem arising in one discipline in a larger historical, cultural, political, social or philosophical framework in order to develop new understanding. | • Analyse a painting to understand power structures in an earlier historical period (visual art and individuals and societies). <br><br>• Understand the impact of Gregor Mendel's discovery of patterns of genetics (sciences and history). |
| **Practical solution** | Students bring together multiple disciplines to achieve a concrete, practical goal (create a product, find a solution or develop an intervention). Students begin with a very clear idea of the outcome and identify the disciplinary knowledge and skills they need to reach a specific goal. | • Explore the relationship between sound wave longitude and tube length **to create a wind instrument** (sciences and music). <br><br>• Design an **advertising campaign** to generate awareness about water use in the community and sustainability (product design, sciences and individuals and societies). |

**Table 4**
*Description and examples of some common forms of integration*

All participating disciplines should work together to fulfill the purpose of an interdisciplinary unit. Disciplines might be brought into interdisciplinary projects at various points in the inquiry; disciplinary expertise may be necessary to fulfill intermediary goals, reframe relevant inquiry questions or move from the analysis of a problem towards its solution. Interdisciplinary teaching and learning can draw on more than one form of integration, as is often the case in the professional and academic world. Students should become increasingly aware of the contributions a variety of disciplines can make towards effective inquiry, action and reflection.

# Possible entry points to interdisciplinary planning

Meaningful integration is the goal of the interdisciplinary unit planning process. Teachers can choose approaches to integration and begin planning interdisciplinary units from multiple points of entry, including MYP key concepts, global contexts or content that invites integration with multiple disciplines.

## Entering through concepts

One way to consider how to make disciplinary connections clear for students is to explore a shared key concept. These broad ideas invite students to make connections between related concepts from multiple disciplines in order to ask new questions and develop new understanding about the relationship between ideas across disciplines.

The MYP identifies **16 key concepts** to be explored across the curriculum. These key concepts, shown in table 5 represent understandings that reach beyond the eight MYP subject groups from which they are drawn.

| Aesthetics | Change | Communication | Communities |
|---|---|---|---|
| Connections | Creativity | Culture | Development |
| Form | Global interactions | Identity | Logic |
| Perspective | Relationships | Systems | Time, place and space |

**Table 5**
*MYP key concepts*

Some key concepts are closely related to others (for example, global interactions represent forms of relationships, systems and change), providing additional opportunities to explore connections between and across conceptual domains in ways that can foster deep understanding. Definitions for MYP key concepts are in the appendices to this guide.

Interdisciplinary units can also be developed by exploring opportunities for integration among **related concepts** through a shared global context and statement of inquiry.

| Language and literature | | | |
|---|---|---|---|
| Audience imperatives | Character | Context | Genre |
| Intertextuality | Point of view | Purpose | Self-expression |
| Setting | Structure | Style | Theme |
| **Language acquisition** | | | |
| **Phases 1–2** | | | |
| Accent | Audience | Context | Conventions |
| Form | Function | Meaning | Message |
| Patterns | Purpose | Structure | Word choice |
| **Phases 3–4** | | | |
| Audience | Context | Conventions | Empathy |
| Function | Idiom | Meaning | Message |
| Point of view | Purpose | Structure | Word choice |
| **Phases 5–6** | | | |
| Argument | Audience | Bias | Context |
| Empathy | Idiom | Inference | Point of view |
| Purpose | Stylistic choices | Theme | Voice |
| **Individuals and societies** | | | |
| **Economics** | | | |
| Choice | Consumption | Equity | Globalization |
| Growth | Model | Poverty | Power |
| Resources | Scarcity | Sustainability | Trade |
| **Geography** | | | |
| Causality (cause and consequence) | Culture | Disparity and equity | Diversity |
| Globalization | Management and intervention | Networks | Patterns and trends |
| Power | Processes | Scale | Sustainability |
| **History** | | | |
| Causality (cause and consequence) | Civilization | Conflict | Cooperation |
| Culture | Governance | Identity | Ideology |
| Innovation and revolution | Interdependence | Perspective | Significance |

| Integrated humanities (drawn from economics, geography and history) | | | |
|---|---|---|---|
| Causality (cause and consequence) | Choice | Culture | Equity |
| Globalization | Identity | Innovation and revolution | Perspective |
| Power | Processes | Resources | Sustainability |

The MYP *Individuals and societies guide* contains suggested related concepts for business management, philosophy, psychology, sociology/anthropology, political science/civics/government, and world religions.

| Sciences | | | |
|---|---|---|---|
| **Biology** | | | |
| Balance | Consequences | Energy | Environment |
| Evidence | Form | Function | Interaction |
| Models | Movement | Patterns | Transformation |
| **Chemistry** | | | |
| Balance | Conditions | Consequences | Energy |
| Evidence | Form | Function | Interaction |
| Models | Movement | Patterns | Transfer |
| **Physics** | | | |
| Consequences | Development | Energy | Environment |
| Evidence | Form | Function | Interaction |
| Models | Movement | Patterns | Transformation |
| **Modular sciences (drawn from biology, chemistry and physics)** | | | |
| Balance | Consequences | Energy | Environment |
| Evidence | Form | Energy | Interaction |
| Models | Movement | Patterns | Transformation |
| **Mathematics** | | | |
| Change | Equivalence | Generalization | Justification |
| Measurement | Models | Patterns | Quantity |
| Representation | Simplification | Space | Systems |

| Arts | | | |
|---|---|---|---|
| **Visual arts** | | | |
| Audience | Boundaries | Composition | Expression |
| Genre | Innovation | Interpretation | Narrative |
| Presentation | Representation | Style | Visual culture |
| **Performing arts** | | | |
| Audience | Boundaries | Composition | Expression |
| Genre | Innovation | Interpretation | Narrative |
| Play | Presentation | Role | Structure |
| **Physical and health education** | | | |
| Adaptation | Balance | Choice | Energy |
| Environment | Function | Interaction | Movement |
| Perspective | Refinement | Space | Systems |
| **Design** | | | |
| Adaptation | Collaboration | Ergonomics | Evaluation |
| Form | Function | Innovation | Invention |
| Markets and trends | Perspective | Resources | Sustainability |

**Table 6**
*Related concepts*

MYP subject-group guides contain detailed information about these related concepts.

The table below illustrates how key and related concepts can be used as entry points into interdisciplinary units:

| **Using concepts** | **Example statements of inquiry and summative assessments** |
|---|---|
| **Achieve an interdisciplinary understanding about a key concept using two or more disciplines.** | Global economic systems are dynamic but seek equilibrium; if one part of the system changes, the whole can be disrupted (key concept: **systems**): an inquiry into how economic exchange in the global market has altered specific ecosystems, such as the Amazon River basin (geography and economics). Students will create a campaign to raise awareness about the issue in their local community and explore alternative solutions. |
| | By modelling the relationships between key variables, statisticians can predict future performance (key concept: **relationships**): an inquiry into patterns of world records in Olympic competition (physical and health education and mathematics). Students will model and predict which world records are likely to be broken at the Olympic games. |

| Using concepts | Example statements of inquiry and summative assessments |
|---|---|
| **Explore the relationship between related concepts from different disciplines to achieve new interdisciplinary understandings.** | Revolutionary art uses aesthetics to transform politics and society (related concepts: **aesthetics** [visual arts] and **revolution** [history]): an inquiry into social or political injustice. Students will create a work of art that provokes responsible action in addressing a contemporary social issue. |
| **Explore the relationship between different key concepts to create new interdisciplinary understandings** | Civilizations have developed different number systems to explain relationships in the world around them (key concepts: **systems** and **relationships**): an inquiry into ancient mathematical ways of knowing. Students will create a presentation that proposes hypotheses about the relationship between Babylonian, Greek, Roman and Incan history and their respective number systems. |

**Table 7**
*Examples of using concepts as entry points*

# Entering through global contexts

Concepts are powerful ideas that have broad application, but the meaning of concepts can change as people experience and interpret them in different contexts. Contexts offer the possibility of new perspectives, additional information, counter-examples and refinements of understanding. Contexts also help to create productive discussion within and outside of the classroom, often identifying inquiries that are meaningful and relevant to students.

MYP global contexts provide a common language for learning, identifying specific settings, events or circumstances that provide more concrete perspectives for inquiry, and they offer common points of entry for an ongoing exploration of what it means to be internationally minded.
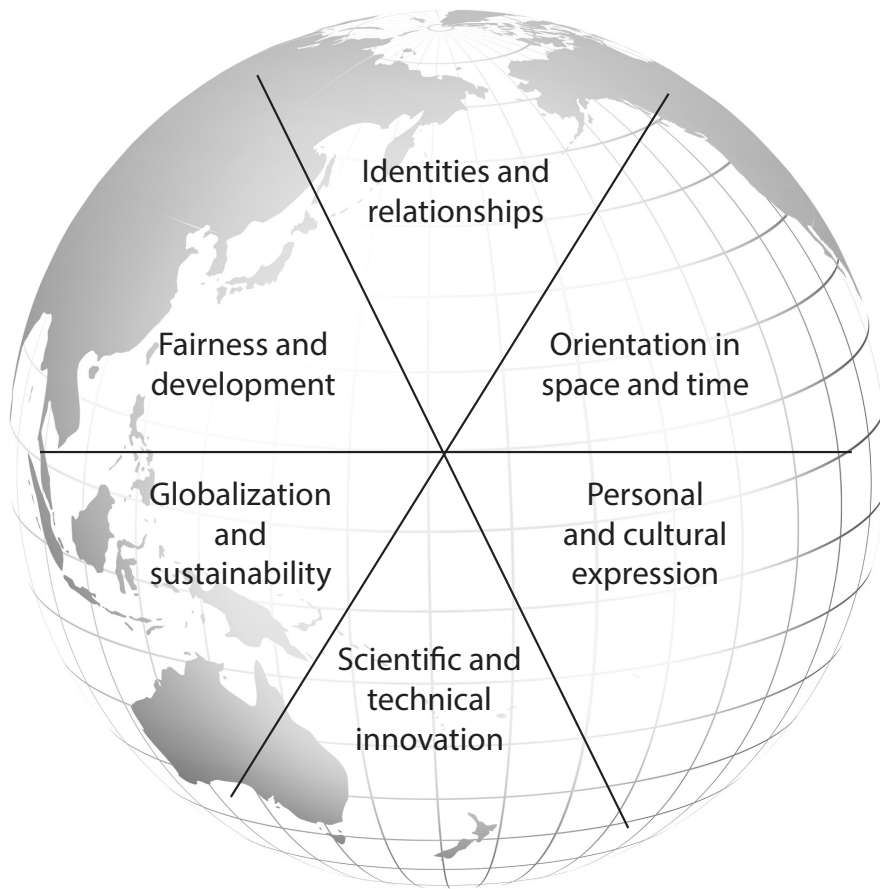
**Figure 6**
*MYP global contexts*

Here are some examples of how contexts can be used to establish connections across disciplines.

| Global context | Focus question(s) and description | Example explorations | Example of potential interdisciplinary units based on the global contexts |
|---|---|---|---|
| Identities and relationships | Who am I? Who are we?<br><br>Students will explore identity; beliefs and values; personal, physical, mental, social and spiritual health; human relationships including families, friends, communities and cultures; what it means to be human. | • Competition and cooperation; teams, affiliation and leadership<br><br>• Identity formation; self-esteem; status; roles and role models<br><br>• Personal efficacy and agency; attitudes, motivation, independence; happiness and the good life<br><br>• Physical, psychological and social development; transitions; health and well-being; lifestyle choices<br><br>• Human nature and human dignity; moral reasoning and ethical judgment; consciousness and mind | Understanding ourselves, including self-control or needs and wants (health and physical education and economics) |

| Global context | Focus question(s) and description | Example explorations | Example of potential interdisciplinary units based on the global contexts |
|---|---|---|---|
| Orientation in space and time | What is the meaning of "where" and "when"?<br><br>Students will explore personal histories; homes and journeys; turning points in humankind; discoveries; explorations and migrations of humankind; the relationships between, and the interconnectedness of, individuals and civilizations, from personal, local and global perspectives. | • Civilizations and social histories, heritage, pilgrimage, migration, displacement and exchange<br>• Epochs, eras, turning points and "big history"<br>• Scale, duration, frequency and variability<br>• Peoples, boundaries, exchange and interaction<br>• Natural and human landscapes and resources<br>• Evolution, constraints and adaptation | Studying different ideas and mechanisms for measuring time (mathematics and history) |

| Global context | Focus question(s) and description | Example explorations | Example of potential interdisciplinary units based on the global contexts |
|---|---|---|---|
| Personal and cultural expression | What is the nature and purpose of creative expression?<br><br>Students will explore the ways in which we discover and express ideas, feelings, nature, culture, beliefs and values; the ways in which we reflect on, extend and enjoy our creativity; our appreciation of the aesthetic. | • Artistry, craft, creation, beauty<br>• Products, systems and institutions<br>• Social constructions of reality; philosophies and ways of life; belief systems; ritual and play<br>• Critical literacy, languages and linguistic systems; histories of ideas, fields and disciplines; analysis and argument<br>• Metacognition and abstract thinking<br>• Entrepreneurship, practice and competency | Experimenting with the role and use of language (language and literature, language acquisition, and arts) |

| Global context | Focus question(s) and description | Example explorations | Example of potential interdisciplinary units based on the global contexts |
|---|---|---|---|
| Scientific and technical innovation | How do we understand the world in which we live?<br><br>Students will explore the natural world and its laws; the interaction between people and the natural world; how humans use their understanding of scientific principles; the impact of scientific and technological advances on communities and environments; the impact of environments on human activity; how humans adapt environments to their needs. | • Systems, models, methods; products, processes and solutions<br><br>• Adaptation, ingenuity and progress<br><br>• Opportunity, risk, consequences and responsibility<br><br>• Modernization, industrialization and engineering<br><br>• Digital life, virtual environments and the Information Age<br><br>• The biological revolution<br><br>• Mathematical puzzles, principles and discoveries | Exploring the role that control over our environments has played in the lives and well-being of human populations (biology and individuals and societies) |
| Globalization and sustainability | How is everything connected?<br><br>Students will explore the interconnectedness of human-made systems and communities; the relationship between local and global processes; how local experiences mediate the global; the opportunities and tensions provided by world-interconnectedness; the impact of decision-making on humankind and the environment. | • Markets, commodities and commercialization<br><br>• Human impact on the environment<br><br>• Commonality, diversity and interconnection<br><br>• Consumption, conservation, natural resources and public goods<br><br>• Population and demography<br><br>• Urban planning, strategy and infrastructure | Investigating waste management and designing an effective recycling campaign for the school (design, chemistry, economics and psychology) |

| Global context | Focus question(s) and description | Example explorations | Example of potential interdisciplinary units based on the global contexts |
|---|---|---|---|
| Fairness and development | What are the consequences of our common humanity?<br><br>Students will explore rights and responsibilities; the relationship between communities; sharing finite resources with other people and with other living things; access to equal opportunities; peace and conflict resolution. | • Democracy, politics, government and civil society<br><br>• Inequality, difference and inclusion<br><br>• Human capability and development; social entrepreneurs<br><br>• Rights, law, civic responsibility and the public sphere<br><br>• Justice, peace and conflict management<br><br>• Power and privilege<br><br>• Authority, security and freedom<br><br>• Imagining a hopeful future | Understanding the nature of development for a specific region (geography, economics and mathematics) |

**Table 8**
*Using global contexts as entry points*

# Entering through content that invites the integration of multiple disciplines

Not all topics are equally suited for quality interdisciplinary inquiry. Some topics, however, defy single disciplinary treatment. Multifaceted topics invite students to integrate two or more bodies of knowledge. For example, understanding how the arts embody cultural traditions demands that students explore elements of history, performing and visual arts (as well as perhaps anthropology). For example, understanding how to improve gymnastic performance might involve physical and health education, physics, biology and dance. Complex phenomena are often inherently engaging for students, and they offer rich opportunities for formal and informal interdisciplinary inquiry.

The examples in table 9 illustrate the types of issues that call for interdisciplinary planning.

| Example | Subject groups |
|---|---|
| Conservation of indigenous traditions through performances | **Individuals and societies**—exploring indigenous people and globalization<br><br>**Physical and health education**—creating a movement composition that reflects the traditions of an indigenous culture<br><br>**Language acquisition**—speaking and writing |
| Conflict resolution | **Language and literature**—understanding conflict and resolution in literary texts; developing role plays<br><br>**Arts**—exploring conflict through symbolism |
| Education for all—women´s access to education and cultural relativism | **Design**—creating an application for mobile devices that organizes global data about primary education<br><br>**Individuals and societies**—researching potential cultural barriers to human rights |
| Health and diseases—HIV prevention | **Physical and health education**—investigating personal responsibility and patterns of transmission<br><br>**Sciences** —understanding viral infections<br><br>**Individuals and societies**—exploring the ethical, economic and social issues surrounding antiviral medications |

Examples inspired by *Global Issues*: *MYP Project Organizer 5 (2010),* Oxford University Press

**Table 9**
*Using multifaceted topics, issues and/or problems as entry points*

# Using the interdisciplinary unit planner

In the context of MYP curriculum, a unit can be defined as a period of study that concludes with a summative assessment. The MYP unit planning process supports inquiry-based, concept-driven teaching and learning in all MYP subjects, as well as interdisciplinary studies.

The MYP **interdisciplinary unit planner** helps to organize interdisciplinary teaching and learning. Reflecting the unique nature of interdisciplinary study, the interdisciplinary planner is designed as a stand-alone planning document, but it can also be used along with subject-specific units when the interdisciplinary inquiry teaching and learning is part of carefully planned inquiries that include multiple subjects or subject groups. The interdisciplinary unit planner promotes the effective teamwork and collaboration that can lead towards more meaningful and rigorous student learning.

> When engaging students in formal, collaboratively planned interdisciplinary units, schools must use the interdisciplinary unit planning process.

| Each interdisciplinary unit must: | Teachers can consider the following questions when planning an interdisciplinary unit: |
|---|---|
| • start with a clear sense of purpose, and be grounded in the relevant disciplines | • To what extent is it necessary to draw upon other disciplines for this unit? |
| • stand alone as a significant, engaging, relevant and challenging learning experience | • In what ways does integrating disciplines contribute to a deeper understanding? |
| • enable students to demonstrate development of the interdisciplinary objectives | • How will disciplines be integrated effectively?<br>• What interdisciplinary objectives will we achieve in this unit? |
| • give students the opportunity to demonstrate achievement and interdisciplinary understandings through specific performances | • How will we know that interdisciplinary understanding has been achieved?<br>• What constitutes adequate evidence of understanding? |
| • be based on a statement of inquiry that is conceptually driven and contextually framed | • What questions and concepts will students explore? In what global context? |
| • involve students in a range of learning experiences planned in response to the inquiry questions | • What will students do to learn? |
| • be planned and taught to promote positive attitudes and the development of the learner profile and approaches to learning skills. | • How will students be enriched by this learning experience?<br>• What attributes and skills will students develop and put into practice? |

**Table 10**

*Interdisciplinary inquiries*

Teachers can also use the interdisciplinary planner to organize teaching and learning of multiple subjects or disciplines within MYP subject groups.

# Inquiry: Establishing the purpose of the unit

The "Inquiry" section of the planner asks, "What is the purpose of our work together? How can we ensure that the purpose of our integration is clear and meaningful?" This part of the planning process explains the unit's alignment with MYP philosophy and requirements. It outlines how the unit integrates disciplines to promote the development of new understanding.

## Purpose of integration

The purpose of integration must be clearly defined. Teachers should be clear about the forms of integration and the related learning opportunities. Integration must be meaningful and not merely a statement of superficial connections. Teachers can use the six forms of integration described in table 4 (pages 18–19) or they can define the purpose of integration in their own words.

| Purpose of integration |
| --- |
| Ask yourself: What is my justification for planning and teaching this interdisciplinary unit? Why is it worth understanding this issue or idea from an interdisciplinary perspective? <br><br> Select a form of integration, or develop your own ideas. |

## Concepts and global context

There are at least three entry routes to interdisciplinary planning. Teachers may start from an interdisciplinary conceptual framework, a shared global context, or from a complex question or challenge that offers opportunities to develop new understanding through the integration of multiple disciplines.

| Concepts for integration | Global context |
| --- | --- |
| Ask yourself: What concepts offer opportunities for integrated exploration through multiple disciplines? <br><br> Select a key concept (or interrelated key concepts) for the unit. <br><br> If relevant, select related concepts from the disciplines that are shared or that invite interdisciplinary inquiry. | Ask yourself: Why does it matter? How does it connect to my students? What is its relevance and significance? <br><br> Select one of the six MYP global contexts, or develop another shared context for teaching and learning. |

## Statement of inquiry

The statement includes the key concept(s) and, if appropriate, related concepts, with explicit reference to a meaningful global context. The statement of inquiry should refer to the integrative understanding to develop through the interdisciplinary unit. Effective interdisciplinary statements of inquiry:

- reflect an integrated approach

- represent a conceptual understanding that invites consideration from multiple disciplines

- explore multifaceted, transferable ideas developed across a range of facts and topics.

| Statement of inquiry |
|---|
| Ask yourself: What understanding or "big idea" do I seek to explore? How can I express this understanding in a way that effectively marries concepts and context?<br><br>Write a clear statement that describes the contextualized understanding that you want students to construct through their engagement with this interdisciplinary unit. |

## Inquiry questions

**Inquiry questions** frame the scope of a unit of study, without limiting student-initiated inquiries. Inquiry questions are used to unpack the statement of inquiry. Teachers collaborating in an interdisciplinary project might choose inquiry questions based on the statement of inquiry in order to ensure adequate conceptual depth from the inquiry. Students can also develop their own questions, adding to the inquiry's meaning and personal significance.

Inquiry questions should engage students and show the inquiry itself is worthy of time and interest. They should allow students to explore the intersection of disciplinary domains by engaging with the statement of inquiry. Some questions might also be needed for developing the disciplinary grounding necessary for effective interdisciplinary learning.

Inquiry questions can be classified as factual, conceptual and debatable.

Good interdisciplinary inquiry questions are:

- **relevant**—engaging, thought-provoking
- **feasible**—in terms of resources, time, teacher expertise
- **clearly framed**—describing the topics of inquiry
- **integrative**—inviting the exploration of perspectives from each discipline that leads towards synthesis.

| Interdisciplinary inquiry questions |
|---|
| Ask yourself: What do we want to learn? What do we need to consider? What background knowledge can we use/must we develop in order to pursue our inquiry?<br><br>Identify questions that are open-ended, student-friendly and essential for inviting critical and creative thinking about the statement of inquiry. Good interdisciplinary questions foster integration and synthesis. Create questions that span the structure of knowledge to include facts, concepts and debatable propositions. |

## Summative assessment (interdisciplinary performance[s] of understanding)

Summative interdisciplinary performances enable students to build and demonstrate their most comprehensive understanding of the topic. These performances—such as a final paper, a presentation, a simulation, or a portfolio—make visible students' interdisciplinary understanding. These performances allow students to bring disciplines together in ways that develop and demonstrate approaches to learning skills, including independence and self-regulation.

| Summative assessment (interdisciplinary performance[s] of understanding) | |
|---|---|
| Identify interdisciplinary criteria that will be addressed in the summative assessment—usually, all of them. | Ask yourself: What will students do to make interdisciplinary understanding of issues and ideas visible? How does this assessment reflect the unit's statement of inquiry?<br><br>Create a task that allows students to demonstrate how they can integrate disciplinary knowledge, skills and attitudes that demonstrate new understanding. |

## Approaches to learning (ATL)

Teachers should select the specific ATL skills that students will develop through their engagement with the interdisciplinary unit. For interdisciplinary teaching and learning, the horizontal and vertical articulation of skills is vitally important. Effective ATL planning can confirm which ATL skills have been (or are concurrently being) developed in other units so that teachers can introduce, reinforce, and build on them as needed. All the objectives for interdisciplinary learning are closely related to ATL skills.

| ATL skill categories | MYP skill clusters |
|---|---|
| Communication | I. Communication |
| Social | II. Collaboration |
| Self-management | III. Organization |
| | IV. Affective |
| | V. Reflection |
| Research | VI. Information literacy |
| | VII. Media literacy |
| Thinking | VIII. Critical thinking |
| | IX. Creative thinking |
| | X. Transfer |

**Table 11**
*Important ATL skills that students should develop in the MYP*

| Approaches to learning (ATL) | | |
| --- | --- | --- |
| Ask yourself: What interdisciplinary skills will students develop throughout the unit? | | |
| Identify ATL skill(s) that students will need in order to meet MYP interdisciplinary objectives, and which they will develop through their engagement with the unit's learning experiences (including formative assessments); you can include general and subject-specific skills. | | |
| An effective way to identify and align ATL skills for MYP units is this simple chart: | | |
| IB ATL category | MYP ATL skill cluster | Specific ATL skill |
| The MYP ATL skills framework can be found in *MYP: From principles into practice* (May 2014). | | |

# Action: Teaching and learning through interdisciplinary inquiry

The "Action" section of the planner identifies the taught curriculum by asking, "How will we support students in the development of their interdisciplinary understanding? What will students do? What opportunities for practice will we provide?" Teachers use this section to focus on **how** students will learn. This section should record a plan for active inquiry. It prompts teachers to gather information on students' prior learning, plan possible learning experiences, and consider the availability and applicability of challenging teaching strategies, tools and resources.

Teachers should refer to the interdisciplinary statement of inquiry to ensure that the quest for conceptual understanding drives the unit's planned learning experiences. Everything that teachers and students do should serve the integrative purpose of the interdisciplinary unit, leading students towards the synthesis of new understanding.

## Disciplinary grounding

In this section of the planner, teachers describe significant subject-specific content. Content may include methods, tools, theories, knowledge or forms of communication from relevant disciplines that are necessary to develop interdisciplinary understanding as expressed in the unit's statement of inquiry.

When more than two subjects or subject groups are participating in the interdisciplinary unit, teachers can add additional columns or pages that describe the necessary disciplinary grounding.
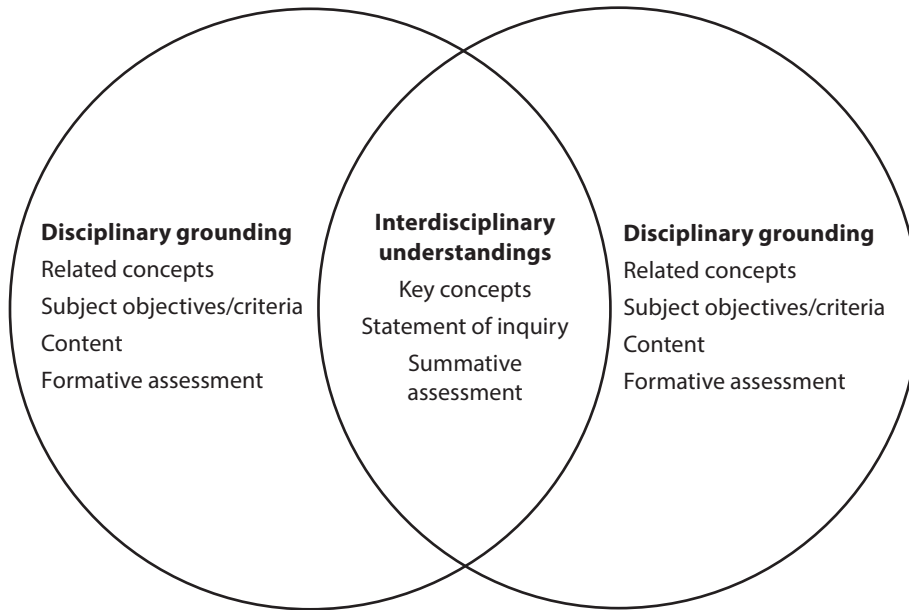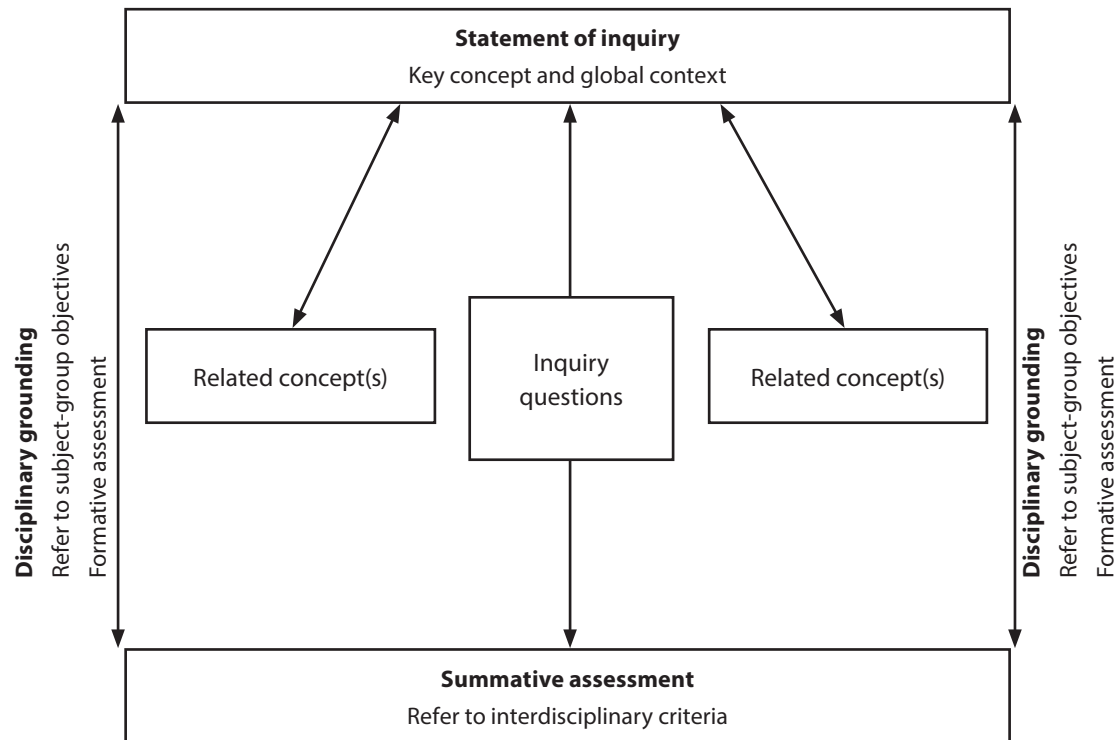
**Figure 7**
*Developing and implementing an interdisciplinary unit*

| Disciplinary grounding |
| --- |
| Ask yourself: What disciplinary grounding is necessary to ensure that students can achieve interdisciplinary understanding?  What disciplinary knowledge and/or skills will students need in order to engage with the unit's statement of inquiry and inquiry questions? What subject-specific objectives will we address? Are there any relevant related concepts that we can explore? |
| Identify the concepts, content and objectives that the unit will incorporate from each participating subject. |

**Figure 8**
*An interdisciplinary planning process*

## Disciplinary and interdisciplinary teaching strategies and learning experiences

Disciplinary teaching and learning experiences focus more narrowly on grounding students in the ideas and modes of thinking of a particular discipline. They provide some of the tools that students need for the more complex interdisciplinary work, ensuring that students understand related disciplinary concepts. In disciplinary performances of understanding, students examine and apply targeted concepts, skills or attitudes in a unit, receiving informative feedback from teachers.

Interdisciplinary teaching and learning experiences allow students to begin to connect and draw on disciplines in an integrated way. Fostering interdisciplinary performances of understanding during the development of the unit helps students see connections among multiple aspects of a topic or problem typically studied by different disciplines. Placed early or midway in a unit, these practice performances help students learn how to make the essential connections between disciplines, which form the basis of authentic interdisciplinary understanding.

**Disciplinary and interdisciplinary learning experiences and teaching strategies**

Ask yourself: What disciplinary and interdisciplinary teaching and learning experiences are necessary? What kind of learning engagements will help students achieve disciplinary grounding and integrative understanding? How will we structure our learning?

Describe how you will create a learning environment and active, inquiry-based learning that develops both disciplinary and interdisciplinary understanding. Align learning experiences, ATL skills development and formative assessment with the factual, conceptual and procedural knowledge that students need in order to synthesize multiple disciplinary approaches to demonstrate their understanding of the unit's statement of inquiry.

# Formative assessment

Formative assessment (assessment **for** learning) provides teachers and students with insights into the ongoing development of knowledge, understanding, skills and attitudes. Ongoing formative assessment, carried out during the course of the unit, can provide teachers and students with insights into the development of disciplinary and interdisciplinary understanding and the effectiveness of the unit's plan for disciplinary integration. Through formative assessment, teachers and students also explore personal learning styles and individual student differences that offer opportunities for differentiation.

| Formative assessment |
| --- |
| Ask yourself: How will we use formative assessment to give students feedback during the unit about their developing integrated perspectives? How will students know "what good looks like" in their performances of understanding? |
| Devise multiple ways of providing ongoing, specific feedback on students' knowledge, skills and attitudes. Provide repeated opportunities for practice. Divide complex tasks into discrete steps with interim markers of progress. Consider strategies for self- and peer-review. |

# Differentiation

**Differentiation** (planning teaching strategies to meet the needs of diverse learners) can build opportunities in which each student can develop, pursue and achieve appropriate personal learning goals. All students should be able to access the curriculum through the unit's design and through the strategies that teachers employ.

| Differentiation |
| --- |
| Ask yourself: How are we differentiating teaching and learning to address individual student learning needs? How can we provide a variety of input, processing strategies and output options that allow students to demonstrate their interdisciplinary understanding? |
| Consider appropriate accommodations for students with learning support requirements. Build on students' strengths and abilities. Use groups to support student learning. Work with an awareness of students' language profiles. |

# Resources

Teachers need to investigate available resources and consider what additional resources might be necessary for the unit.

| Resources |
| --- |
| Ask yourself: What visual and written texts can support students' growing understanding? What community resources might enrich and extend our interdisciplinary understanding? What media and Internet sources can provide multiple perspectives on interdisciplinary issues and ideas? |
| Consider the language and life experiences that students bring to the inquiry. Inventory possible resources and develop a plan for sharing them. Collaborate with colleagues from other disciplines to generate possibilities and innovative solutions. Create exemplars and organize previous examples of student work. |

# Reflection: Considering the planning, process and impact of interdisciplinary inquiry

The "Reflection" section of the planner prompts critical reflection throughout the process of planning, teaching and reviewing the success of interdisciplinary units. Throughout the unit, teachers should explicitly teach, model and provide meaningful feedback on the process of reflection.

| Prior to teaching the unit | During teaching | After teaching the unit |
| --- | --- | --- |
| Ask yourself: <br><br> • Did the disciplines we chose provide realistic and meaningful opportunities for integration? <br><br> • Have our approaches to teaching supported the development of students' interdisciplinary understanding? <br><br> • How effectively have we structured the logistics of interdisciplinary collaboration? <br><br> • What might we do to strengthen our own understanding of the MYP interdisciplinary unit planning process? <br><br> • What will we keep and what will we change when/if we teach this unit again? <br><br> • What evidence do we have that demonstrates how students have developed new interdisciplinary understanding? <br><br> • What opportunities might we develop for responsible action? <br><br> • What type of action have students taken in response to their engagement with this interdisciplinary unit? <br><br> • How have we developed attributes of the IB learner profile that are shared across disciplines? <br><br> Create regular opportunities for reflection on the unit, including important milestones in its teaching. Be mindful of students' engagement and progress, noting possible changes in the course and ideas for improvement. Review the unit's purpose and the extent to which you and your students achieved it. Work collaboratively to evaluate student achievement. | | |

Planning interdisciplinary learning

# Interdisciplinary unit planner

| Teacher(s) | | Subject groups | |
|---|---|---|---|
| Unit title | | MYP year | Unit duration |

## Inquiry: establishing the purpose of an interdisciplinary unit

| Purpose of integration | | | |
|---|---|---|---|

| Key concept(s)/related concept(s) | | Global context | |
|---|---|---|---|

| Statement of inquiry | | | |
|---|---|---|---|

Fostering interdisciplinary teaching and learning in the MYP

**Inquiry questions**

**Factual**

**Conceptual**

**Debatable**

**Summative assessment—interdisciplinary performance(s) of understanding**

Interdisciplinary criteria

Task(s)

**Approaches to learning (ATL)**

# Action: Teaching and learning through interdisciplinary inquiry

| Disciplinary grounding | | | | |
| --- | --- | --- | --- | --- |
| **Subject** | **Subject** | | | |
| MYP objective | MYP objective | | | |
| Related concepts | Related concepts | | | |
| Content | Content | | | |
| Disciplinary learning engagements and teaching strategies | Disciplinary learning engagements and teaching strategies | | | |

## Interdisciplinary learning process

### Interdisciplinary learning experiences and teaching strategies

### Formative assessment

### Differentiation

## Resources

## Reflection: considering the planning, process and impact of interdisciplinary inquiry

| Prior to teaching the unit | During teaching | After teaching the unit |
| --- | --- | --- |
| | | |

# Organizing interdisciplinary learning

- In MYP schools, collaborative planning is vital. Time for collaborative planning must be managed systematically and effectively, and it must involve all teachers. Meeting time is especially important for developing horizontal and vertical articulation of the curriculum.

- As teachers plan collaboratively to explore global contexts and develop inquiry into key concepts within their subjects, opportunities will emerge in which two or more subject groups can join together to create an integrated inquiry. As teachers identify complementary content, skills and concepts, they can plan MYP units that build on this potential integration.

- The *Fostering interdisciplinary teaching and learning in the MYP teacher support material* provides examples of school structures that can facilitate collaborative planning between and among subjects.

## From activities to performances of understanding

Performances of understanding represent learning experiences that encourage flexible thinking in complex, unfamiliar situations. They go beyond activities like "going on a field trip" or "gathering information about our city". Learning experiences become performances when students are asked to use information deliberately to create new understandings. For example, the field trip may be part of a unit on endangered species, and students may be asked to identify evidence of predator–prey interactions during their trip in order to build hypotheses about possible threats to the local ecosystem.

Performances of understanding allow students both to build and demonstrate their understanding in and across subjects. They are based on a philosophy of education in which understanding is not something students **have**—like a set of facts we possess—but rather something that students **do**. (Note that the term "performances" does not emphasize, and is not limited to, "stage performances" such as plays or concerts. Rather, it refers to opportunities to consider what students understand through action. Performances might include a group presentation, an essay, a mental computation in response to a challenging question, or many other examples of student work.)

## Making interdisciplinary understanding visible

MYP interdisciplinary units emphasize the process of learning, while also attending to its results. When determining how performances will demonstrate interdisciplinary understanding, teachers need to identify how interdisciplinary understanding will be made visible. Teachers should also plan how they will help students structure and document their interdisciplinary inquiry process.

| Teachers should consider: | Examples of tools to make understanding visible: |
|---|---|
| • the product that students will create as a result of undertaking the interdisciplinary unit | Website, essay, dance performance, experiment, investigation, oral presentation |
| • the process by which the end product was achieved | Observation protocol, process journal, checklist, experiment report, action plan |
| • student reflection about learning throughout the interdisciplinary process | Commentary, presentation, journal, visual organizer, blog, personal learning log, shared digital notes and workspaces |

**Table 12**

*Making interdisciplinary understanding visible*

In summary, high-quality interdisciplinary experiences invite students to engage in a rigorous process in which they:

• integrate disciplinary expertise and knowledge and understanding to address an issue or idea

• inquire into the disciplines to select relevant methods, concepts, theories and tools that can be used to achieve a clear purpose within a specific global context

• synthesize disciplines to advance their own interpretation and consider possible courses of action

• create a product to communicate interdisciplinary understandings

• reflect on the significance of their work and evaluate limitations and possibilities of integrating disciplines in ways that develop new understanding.

# MYP assessment practice

In interdisciplinary units teachers must assess the integration of disciplines using the MYP interdisciplinary criteria. This assessment is carefully informed by important ATL skills and the process of interdisciplinary teaching and learning described in this guide.

Crafting quality assessments requires careful attention to the strategies through which teachers gather information about student learning, including the criteria by which they measure progress and the feedback they give to help students develop further understanding. Here are some practical guidelines for rigorous interdisciplinary assessment of student learning.

1. **Assessment is carefully planned:** In planning a course or unit of work teachers develop an assessment strategy that is an integral part of teaching and learning. For example, they define a final performance of understanding, and based on its demands, decide which learning experiences to engage and how to sequence them over time.

2. **Assessment is formative and summative:** In addition to the unit's summative assessment, teachers assess skills and understanding before and throughout the unit. For example, early in a unit teachers may invite students to solve a problem or brainstorm ideas about the unit's topic in order to assess and build students' background knowledge. Throughout the unit, teachers design disciplinary and interdisciplinary learning engagements that develop these early understandings and scaffold students' growing understanding.

3. **Assessment is aligned with MYP interdisciplinary aims and objectives:** In planning and conducting their units, teachers use the interdisciplinary MYP aims, objectives and achievement level descriptors for each criteria as guideposts.

4. **Assessment is based on evidence of student work:** In the MYP, assessment builds on close analysis of student work. Teachers select relevant pieces of student work for assessment and are able to point out accomplishments or misunderstandings in student products or performances.

5. **Assessment offers informative feedback:** Viewed as an opportunity to support further learning, assessment does not seek to expose students in their mistakes but rather to help students recognize, and have evidence of, both their accomplishments and their misconceptions. Effective feedback always includes the development of strategies to improve performance.

## Collecting evidence

In the MYP, teachers are encouraged to employ a variety of assessment strategies, tasks and tools to monitor and empower student learning. For example, teachers can gather information about student interdisciplinary understanding that includes making classroom observations, reading and responding to student journals, and jointly analysing portfolios of student work.

# Collaborative assessment

While interdisciplinary teaching can be done by a single teacher, most typically it is a collaborative effort. In terms of assessment, the collaboration matters because it enables teachers to draw on their particular areas of expertise and their subject-specific goals to assess student work. To move from a multidisciplinary assessment (in which teachers only consider the perspective of their individual subjects) towards an interdisciplinary approach, teachers can engage in collaborative assessments of student work. Analysing students' interdisciplinary learning entails an important professional development opportunity for teachers who begin to understand how MYP subjects and subject groups interact, overlap, challenge and complement one another. MYP criteria for interdisciplinary learning provide the starting place for these powerful conversations.

For determining achievement levels for disciplinary grounding (criterion A), teachers can consider subject-specific criteria but must determine the appropriate achievement level based on evidence from all participating subjects.

# Recording and reporting interdisciplinary assessment

Schools can design systems and processes to report MYP achievement levels for interdisciplinary learning that meet the needs of their students and local requirements. Some possibilities include:

- a dedicated individual report on interdisciplinary learning

- as part of the school's regular reporting process, a section that contains achievement levels for each criterion in all formally developed interdisciplinary units

- an annual summative report that contains a cumulative "best-fit" judgment about the student's achievement in interdisciplinary learning (including criterion level total and MYP grade)

- regular communication to students and parents about formal interdisciplinary units and the student's achievement with respect to each criterion (for example: an explanatory letter, markscheme and assessed work that students can discuss with their parents or guardians)

- conversations about interdisciplinary learning in student conferences and/or student-parent conferences.

> Schools must report student achievement in interdisciplinary learning to students and parents.

# External assessment of interdisciplinary learning

The MYP features a robust assessment design that includes rigorous, criterion-related internal assessment (coursework) for all subject groups, as well as an optional range of externally marked onscreen assessments. Details of these assessments are available in the *Guide to MYP eAssessment* and the annual *Handbook of procedures for the Middle Years Programme*.

Schools that register candidates for MYP eAssessment in interdisciplinary learning must devise a procedure for determining and reporting students' predicted grades. Students participating in MYP eAssessment for interdisciplinary learning should take part in at least two formal interdisciplinary units in MYP years 4 and 5.

# Interdisciplinary assessment criteria

The following assessment criteria have been established by the IB for interdisciplinary units in the MYP. All interdisciplinary assessment in each year of the MYP must be based on the developmentally appropriate version of these assessment criteria as provided in this section.

| Criterion A | Disciplinary grounding | Maximum 8 |
|---|---|---|
| Criterion B | Synthesizing | Maximum 8 |
| Criterion C | Communicating | Maximum 8 |
| Criterion D | Reflecting | Maximum 8 |

For each assessment criterion, a number of band descriptors are defined. These describe a range of achievement levels with the lowest represented as 0.

The descriptors concentrate on positive achievement, although failure to achieve may be included in the description for the lower levels.

In order to measure a student's progress in terms of his or her capacity to undertake interdisciplinary projects, four criteria have been established that correspond directly to the four objectives identified in this guide. The band levels represent limited (1–2), adequate (3–4), substantial (5–6) and excellent (7–8) achievement against the objectives.

## Using the assessment criteria

Assessment criteria for interdisciplinary learning have been provided for years 1, 3 and 5 of the MYP. Schools can choose to use year 3 objectives and criteria in year 2, and those for year 5 in year 4. Alternatively, schools can develop specific objectives and assessment criteria for years 2 and 4. Schools may also add other criteria, in addition to the MYP criteria, in response to national requirements and report on these internally to parents and students.

> When engaging students in formal collaboratively planned interdisciplinary units, schools must use the interdisciplinary assessment criteria to inform formative assessment and to determine achievement levels for summative assessment tasks.

Interdisciplinary assessment should be done collaboratively by all teachers involved in the interdisciplinary units.

# Clarifying published criteria

The final assessment criteria as published must be used when awarding achievement levels. However, teachers can also define specific expectations.

These expectations might be in the form of:

- a task-specific clarification of the criteria, using the published criteria but with some wording changed to explain the task

- an oral discussion of the task and explanation of various achievement levels (including exemplars from a range of accomplishments)

- a task sheet that explains performance expectations.

It is important for teachers to specify the expected outcomes at the beginning of each assessment task so that students understand the task's detailed requirements. When clarifying expectations for students, teachers need to ensure that they do not alter the standard expected in the published criteria or introduce additional requirements.

# Interdisciplinary learning assessment criteria: Year 5

## Criterion A: Disciplinary grounding

**Maximum: 8**

At the end of the programme, students should be able to:

- demonstrate relevant disciplinary factual, conceptual and/or procedural knowledge.

| Achievement level | Level descriptor |
|---|---|
| 0 | The student does not achieve a standard described by any of the descriptors given below. |
| 1–2 | The student: <br> • demonstrates **limited** relevant disciplinary grounding. |
| 3–4 | The student: <br> • demonstrates **some** relevant disciplinary grounding. |
| 5–6 | The student: <br> • demonstrates **most necessary** disciplinary grounding. |
| 7–8 | The student: <br> • demonstrates **extensive necessary** disciplinary grounding. |

**Note:** Disciplinary grounding describes factual, conceptual, and procedural knowledge that students develop from their study of MYP subjects. Teachers must use subject-group specific criteria to support their judgment of student achievement in disciplinary grounding. These judgments can be based on specific summative assessments within the context of the interdisciplinary unit itself, or they may be determined by related disciplinary assessment tasks.

Levels awarded for this criterion should represent the joint assessment of collaborating teachers from all subjects participating in the interdisciplinary inquiry. When student achievement varies in applying knowledge from different disciplines, teachers should use "best-fit" professional judgment to determine an appropriate level that represents each student's overall disciplinary grounding.

# Criterion B: Synthesizing

**Maximum: 8**

At the end of the programme, students should be able to:

- synthesize disciplinary knowledge to demonstrate interdisciplinary understanding.

| Achievement level | Level descriptor |
|---|---|
| 0 | The student does not reach a standard described by any of the descriptors below. |
| 1–2 | The student:<br><br>• **establishes few and/or superficial** connections between disciplines. |
| 3–4 | The student:<br><br>• **connects** disciplinary knowledge to achieve **adequate** understanding.. |
| 5–6 | The student:<br><br>• **synthesizes** disciplinary knowledge to demonstrate **consistent, thorough** interdisciplinary understanding. |
| 7–8 | The student:<br><br>• **synthesizes** disciplinary knowledge to demonstrate **consistent, thorough** and **insightful** interdisciplinary understanding. |

**Note:** For this criterion, the demonstrations should vary from familiar (year 1), to unfamiliar and familiar (year 3), to a range of increasingly complex unfamiliar situations (year 5) as students progress in the programme. Teachers are responsible for providing opportunities for students to demonstrate interdisciplinary understanding with increasing independence.

# Criterion C: Communicating

**Maximum: 8**

At the end of the programme, students should be able to:

- use appropriate strategies to communicate interdisciplinary understanding effectively

- document sources using recognized conventions.

| Achievement level | Level descriptor |
|---|---|
| 0 | The student does not reach a standard described by any of the descriptors below. |
| 1–2 | The student: <br> • communicates interdisciplinary understanding with **little structure, clarity or coherence**. |
| 3–4 | The student: <br> • communicates interdisciplinary understanding with **some** organization and coherence, **recognizing** appropriate forms or media <br> • **lists** sources. |
| 5–6 | The student: <br> • communicates interdisciplinary understanding that is **generally** organized, clear and coherent, **beginning** to use selected forms or media **effectively** <br> • **documents relevant** sources using a recognized convention. |
| 7–8 | The student: <br> • communicates interdisciplinary understanding that is **consistently** well structured, clear and coherent, using selected forms or media **effectively** <br> • **consistently documents well-chosen** sources using a recognized convention. |

**Note:** For this criterion, communication in year 1 should take place with support, in year 3 with minimal guidance, and in year 5 independently.

# Criterion D: Reflecting

**Maximum: 8**

At the end of the programme, students should be able to:

- reflect on the development of their own interdisciplinary understanding

- evaluate the benefits and limitations of disciplinary and interdisciplinary knowledge and ways of knowing in specific situations.

| Achievement level | Level descriptor |
|---|---|
| 0 | The student does not reach a standard described by any of the descriptors below. |
| 1–2 | The student:<br><br>• demonstrates **limited** reflection on  his or her development of interdisciplinary understanding<br><br>• **describes superficially** the limitations **or** benefits of disciplinary and interdisciplinary knowledge in specific situations. |
| 3–4 | The student:<br><br>• demonstrates **adequate** reflection on his or her development of interdisciplinary understanding<br><br>• **describes some** benefits **and** limitations of disciplinary and interdisciplinary knowledge in specific situations. |
| 5–6 | The student:<br><br>• demonstrates **significant** reflection on  his or her development of interdisciplinary understanding.<br><br>• **explains** the limitations and benefits of disciplinary and interdisciplinary knowledge in specific situations. |
| 7–8 | The student:<br><br>• demonstrates **thorough** and **nuanced** reflection on  his or her development of interdisciplinary understanding<br><br>• **evaluates thoroughly** and **with sophistication** the limitations and benefits of disciplinary and interdisciplinary knowledge and **ways of knowing** in specific situations. |

**Note:** Students should reflect on the contribution of disciplines throughout the interdisciplinary learning process.

# Progression in interdisciplinary learning

## Criterion A: Disciplinary grounding

| Achievement level | Level descriptors Year 1 | Level descriptors Year 3 | Level descriptors Year 5 |
|---|---|---|---|
| 0 | The student does not reach a standard described by any of the descriptors below. | The student does not reach a standard described by any of the descriptors below. | The student does not reach a standard described by any of the descriptors below. |
| 1–2 | The student:<br>• demonstrates **limited** relevant disciplinary grounding. | The student:<br>• demonstrates **limited** relevant disciplinary grounding. | The student:<br>• demonstrates **limited** relevant disciplinary grounding. |
| 3–4 | The student:<br>• demonstrates **some** relevant disciplinary grounding. | The student:<br>• demonstrates **some** relevant disciplinary grounding. | The student:<br>• demonstrates **some** relevant disciplinary grounding. |
| 5–6 | The student:<br>• demonstrates **most necessary** disciplinary grounding. | The student:<br>• demonstrates **most necessary** disciplinary grounding. | The student:<br>• demonstrates **most necessary** disciplinary grounding. |
| 7–8 | The student:<br>• demonstrates **extensive necessary** disciplinary grounding. | The student:<br>• demonstrates **extensive necessary** disciplinary grounding. | The student:<br>• demonstrates **extensive necessary** disciplinary grounding. |

**Note:** Disciplinary grounding describes factual, conceptual, and procedural knowledge that students develop from their study of MYP subjects. Teachers must use subject-specific criteria to support their judgment of student achievement in disciplinary grounding. These judgments can be based on specific summative assessments within the context of the interdisciplinary unit itself, or they may be determined by related disciplinary assessment tasks.

Levels awarded for this criterion should represent the joint assessment of collaborating teachers from all subjects participating in the interdisciplinary inquiry. When student achievement varies in applying knowledge from different disciplines, teachers should use "best-fit" professional judgment to determine an appropriate level that represents each student's overall disciplinary grounding.

# Criterion B: Synthesizing

| Achievement level | Level descriptors Year 1 | Level descriptors Year 3 | Level descriptors Year 5 |
|---|---|---|---|
| 0 | The student does not reach a standard described by any of the descriptors below. | The student does not reach a standard described by any of the descriptors below. | The student does not reach a standard described by any of the descriptors below. |
| 1–2 | The student:<br><br>• **establishes few and/or superficial** connections between disciplinary knowledge. | The student:<br><br>• **establishes few and/or superficial** connections between disciplinary knowledge. | The student:<br><br>• **establishes few and/or superficial** connections between disciplinary knowledge. |
| 3–4 | The student:<br><br>• **connects** disciplinary knowledge to achieve **adequate** understanding. | The student:<br><br>• **connects** disciplinary knowledge to achieve **adequate** understanding. | The student:<br><br>• **connects** disciplinary knowledge to achieve **adequate** understanding |
| 5–6 | The student:<br><br>• **synthesizes** disciplinary knowledge to demonstrate interdisciplinary understanding. | The student:<br><br>• **synthesizes** disciplinary knowledge to demonstrate interdisciplinary understanding. | The student:<br><br>• **synthesizes** disciplinary knowledge to demonstrate **consistent, thorough** interdisciplinary understanding. |
| 7–8 | The student:<br><br>• **synthesizes** disciplinary knowledge to demonstrate **consistent** interdisciplinary understanding. | The student:<br><br>• **synthesizes** disciplinary knowledge to demonstrate **consistent** and **thorough** interdisciplinary understanding. | The student:<br><br>• **synthesizes** disciplinary knowledge to demonstrate **consistent, thorough** and **insightful** interdisciplinary understanding. |

**Note:** For this criterion, the demonstrations should vary from familiar (year 1), to unfamiliar and familiar (year 3), to a range of increasingly complex unfamiliar situations (year 5) as students progress in the programme. Teachers are responsible for providing opportunities for students to demonstrate interdisciplinary understanding with increasing independence.

# Criterion C: Communicating

| Achievement level | Level descriptors Year 1 | Level descriptors Year 3 | Level descriptors Year 5 |
|---|---|---|---|
| 0 | The student does not reach a standard described by any of the descriptors below. | The student does not reach a standard described by any of the descriptors below. | The student does not reach a standard described by any of the descriptors below. |
| 1–2 | The student:<br><br>• communicates interdisciplinary understanding in a **limited way**. | The student:<br><br>• communicates interdisciplinary understanding with **little** structure, clarity or coherence. | The student:<br><br>• communicates interdisciplinary understanding with **little** structure, clarity or coherence. |
| 3–4 | The student:<br><br>• communicates interdisciplinary understanding with **some** clarity. | The student:<br><br>• communicates interdisciplinary understanding with **some** clarity and coherence<br>• **identifies** sources. | The student:<br><br>• communicates interdisciplinary understanding with **some** organization and coherence, **recognizing** appropriate forms or media<br>• **lists** sources. |
| 5–6 | The student:<br><br>• communicates interdisciplinary understanding in a way that is **mostly** clear<br>• **identifies** sources. | The student:<br><br>• communicates interdisciplinary understanding that is **generally** well organized and coherent, **recognizing** appropriate forms or media<br>• identifies **relevant** sources. | The student:<br><br>• communicates interdisciplinary understanding that is **generally** organized, clear and coherent, **beginning** to use selected forms or media **effectively**<br>• **documents relevant** sources using a recognized convention. |

| Achievement level | Level descriptors Year 1 | Level descriptors Year 3 | Level descriptors Year 5 |
|---|---|---|---|
| 7–8 | The student:<br><br>• communicates interdisciplinary understanding with clarity, **organization and coherence**<br>• **acknowledges** relevant sources. | The student:<br><br>• communicates interdisciplinary understanding that is clear and well structured, **beginning** to use the selected forms or media **appropriately**<br>• **documents** relevant sources. | The student:<br><br>• communicates interdisciplinary understanding that is **consistently** well structured, clear and coherent, using selected forms or media **effectively**<br>• **consistently documents well-chosen** sources using a recognized convention. |

**Note:** For this criterion, communication in year 1 should take place with support, in year 3 with minimal guidance and in year 5 independently.

# Criterion D: Reflecting

| Achievement level | Level descriptors Year 1 | Level descriptors Year 3 | Level descriptors Year 5 |
|---|---|---|---|
| 0 | The student does not reach a standard described by any of the descriptors below. | The student does not reach a standard described by any of the descriptors below. | The student does not reach a standard described by any of the descriptors below. |
| 1–2 | The student:<br><br>• **describes** strengths and limitations of the interdisciplinary learning process in **a limited way**. | The student:<br><br>• reflects on himself or herself as a disciplinary and interdisciplinary learner in a **limited** way<br><br>• **outlines** the contribution of selected disciplines in a limited way. | The student:<br><br>• demonstrates **limited** reflection on his or her development of interdisciplinary understanding<br><br>• **describes superficially** the limitations **or** benefits of disciplinary and interdisciplinary knowledge in specific situations. |
| 3–4 | The student:<br><br>• **describes** strengths and limitations of the interdisciplinary learning process<br><br>• **states some** limitations or benefits of disciplinary knowledge in specific situations. | The student:<br><br>• **reflects** on himself or herself as a disciplinary and interdisciplinary learner<br><br>• **states some** limitations and benefits of disciplinary and interdisciplinary knowledge in specific situations. | The student:<br><br>• demonstrates **adequate** reflection on his or her development of interdisciplinary understanding<br><br>• **describes some** benefits **and** limitations of disciplinary and interdisciplinary knowledge in specific situations. |

| Achievement level | Level descriptors Year 1 | Level descriptors Year 3 | Level descriptors Year 5 |
|---|---|---|---|
| 5–6 | The student:<br><br>• **explains** strengths and limitations of the interdisciplinary learning process<br>• **states** some limitations **and** benefits of disciplinary **and** interdisciplinary knowledge in specific situations. | The student:<br><br>• **consistently** reflects on himself or herself as a disciplinary and interdisciplinary learner<br>• **describes** some benefits and limitations of disciplinary and interdisciplinary knowledge in specific situations. | The student:<br><br>• demonstrates **significant** reflection on his or her development of interdisciplinary understanding<br>• **explains** the limitations and benefits of disciplinary and interdisciplinary knowledge in specific situations. |
| 7–8 | The student:<br><br>• **evaluates** strengths and limitations of the interdisciplinary learning process<br>• **describes** some benefits and limitations of disciplinary and interdisciplinary knowledge in specific situations. | The student:<br><br>• **consistently** reflects **with sophistication on** himself or herself as a disciplinary and interdisciplinary learner<br>• **explains** the limitations and benefits of disciplinary and interdisciplinary knowledge in specific situations. | The student:<br><br>• demonstrates **thorough** and **nuanced** reflection on his or her development of interdisciplinary understanding<br>• **evaluates thoroughly** and **with sophistication** the limitations and benefits of disciplinary and interdisciplinary knowledge and **ways of knowing** in specific situations. |

**Note:** Students should reflect on the contribution of disciplines throughout the interdisciplinary learning process.

# MYP key concepts

Key concepts are powerful abstract ideas that have many dimensions and definitions. They have important interconnections and overlapping concerns. The following broad descriptions apply across subject groups, and MYP subject-group guides will suggest further discipline-specific understandings.

Inquiry into MYP key concepts will further develop (and debate) the meaning of these significant ideas.

- **Aesthetics** deals with the characteristics, creation, meaning and perception of beauty and taste. The study of aesthetics develops skills for the critical appreciation and analysis of art, culture and nature.

- **Change** is a conversion, transformation, or movement from one form, state or value to another. Inquiry into the concept of change involves understanding and evaluating causes, processes and consequences.

- **Communication** is the exchange or transfer of signals, facts, ideas and symbols. It requires a sender, a message and an intended receiver. Communication involves the activity of conveying information or meaning. Effective communication requires a common "language" (which may be written, spoken or non-verbal).

- **Communities** are groups that exist in proximity defined by space, time or relationship. Communities include, for example, groups of people sharing particular characteristics, beliefs or values as well as groups of interdependent organisms living together in a specific habitat.

- **Connections** are links, bonds and relationships among people, objects, organisms or ideas.

- **Creativity** is the process of generating novel ideas and considering existing ideas from new perspectives. Creativity includes the ability to recognize the value of ideas when developing innovative responses to problems; it may be evident in process as well as outcomes, products or solutions.

- **Culture** encompasses a range of learned and shared beliefs, values, interests, attitudes, products, ways of knowing and patterns of behaviour created by human communities. The concept of culture is dynamic and organic.

- **Development** is the act or process of growth, progress or evolution, sometimes through iterative improvements.

- **Form** is the shape and underlying structure of an entity or piece of work, including its organization, essential nature and external appearance.

- **Global interactions**, as a concept, focuses on the connections between individuals and communities, as well as their relationships with built and natural environments, from the perspective of the world as a whole.

- **Identity** is the state or fact of being the same. It refers to the particular features that define individuals, groups, things, eras, places, symbols and styles. Identity can be observed, or it can be constructed, asserted, and shaped by external and internal influences.

- **Logic** is a method of reasoning and a system of principles used to build arguments and reach conclusions.

- **Perspective** is the position from which we observe situations, objects, facts, ideas and opinions. Perspective may be associated with individuals, groups, cultures or disciplines. Different perspectives often lead to multiple representations and interpretations.

- **Relationships** are the connections and associations between properties, objects, people and ideas— including the human community's connections with the world in which we live. Any change in relationship brings consequences—some of which may occur on a small scale, while others may be far reaching, affecting large networks and systems like human societies and the planetary ecosystem.

- **Systems** are sets of interacting or interdependent components. Systems provide structure and order in human, natural and built environments. Systems can be static or dynamic, simple or complex.

- **Time, place and space** is an intrinsically linked concept that refers to the absolute or relative position of people, objects and ideas. "Time, place and space" focuses on how we construct and use our understanding of location ("where" and "when").

# MYP command terms for interdisciplinary learning

| Command term | Definition |
|---|---|
| Demonstrate | Make clear by reasoning or evidence, illustrating with examples or practical application. |
| Describe | Give a detailed account or picture of a situation, event, pattern or process. |
| Document | Credit sources of information used by referencing (or citing) following a recognized referencing system. References should be included in the text and also at the end of the piece of work in a reference list or bibliography. |
| Evaluate | Make an appraisal by weighing up the strengths and limitations. |
| Explain | Give a detailed account including reasons or causes. |
| Identify | Provide an answer from a number of possibilities. Recognize and state briefly a distinguishing fact or feature. |
| List | Give a sequence of brief answers with no explanation. |
| Outline | Give a brief account or summary. |
| Recognize | Identify through patterns or features. |
| Reflect | Think about deeply; consider. |
| State | Give a specific name, value or other brief answer without explanation or calculation. |
| Synthesize | Combine different ideas in order to create new understanding. |
| Use | Apply knowledge or rules to put theory into practice. |

For the interdisciplinary on-screen examination, command terms from any MYP subject groups can be used.

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