

MYP Design

A companion manual to support
Principles to Practice and the *Subject Guide*

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Conceptual Understanding

A concept is a “big idea”—a principle or notion that is enduring, the significance of which goes beyond particular origins, subject matter or place in time. Concepts represent the vehicle for students’ inquiry into the issues and ideas of personal, local and global significance, providing the means by which they can explore the essence of design.

Concepts have an important place in the structure of knowledge that requires students and teachers to think with increasing complexity as they organize and relate facts and topics.

Concepts express understanding that students take with them into lifelong adventures of learning. They help students to develop principles, generalizations and theories. Students use conceptual understanding as they solve problems, analyse issues, and evaluate decisions that can have an impact on themselves, their communities and the wider world.

In the MYP, conceptual understanding is framed by prescribed key and related concepts. Teachers must use these concepts to develop the curriculum

KEY CONCEPTS

Key concepts promote interdisciplinary understanding. They represent big ideas that are both within and across disciplines and subjects.

The MYP has chosen 16 key concepts to be explored across all subjects, but 4 have been identified as the framework for design courses. As your focus for the year, these concepts will inform units of work and help to organize teaching and learning. Unit of study will focus on one to two key concepts and each concept should be addressed at least once in the duration of the course.

Aesthetics	Change	Communication	Communities
Connections	Creativity	Culture	Development
Form	Global Interactions	Identity	Logic
Perspective	Relationships	Systems	Time, Place, & Space

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).

While exploring the concept of communication, students develop an awareness and understanding of how, why and when we need to ensure that clear messages are given and received throughout the design process. It ensures that ideas can be communicated clearly and each person involved in the development of an idea from conception to use has a common and consistent understanding of the solution and its function. Communication drives invention to become innovation.

When inquiring and analysing, students need to communicate with clients and target markets to identify the design need. When developing ideas, students engage in internal dialogue, using design sketches and models to think through the feasibility of their ideas. When creating the solution, students need to develop clear plans that can be followed easily. The final product must also clearly communicate its intent and how a user interacts with it.

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.

Through MYP design, students will develop an understanding that a solution to a problem for one community will create problems for another, some on a small or even personal scale, while others may be far-reaching, affecting communities thousands of miles away or the global community.

When establishing the need and developing the design brief, the student always considers the community, whether this is a community that affects the design (target audience) or one that is affected by it. When developing ideas, engagement with the target audience and client drives the development to ensure it is fit-for-purpose, and the student must engage with the communities that effect and are affected by the solution when evaluating its effectiveness in solving the problem.

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

All ideas need refinement, through development, to become successful, appropriate and feasible. The development of solutions allows problems to be solved with greater success.

Even though the name suggests that the main focus of development would be found in developing ideas, students have to develop research plans as and when they realize that there is further information they need in order to solve the problem. Students constantly adapt and change their plans when creating the solution, dependent on the thoroughness of their planning and, when evaluating, students develop testing methods to assess the success of the solution.

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.

While exploring the concept of systems, students develop an awareness and understanding that everything is connected to a single system or multiple systems. Products and solutions are systems of components combined to carry out a specific function. Systems also structure processes: the design cycle is an example of a system. Open loop systems have an input, process and output. Closed loop systems have an input, process, output and mechanism for feedback.

The student designs and develops systems for testing products when inquiring and analysing, and when developing testing methods for evaluating. Throughout developing ideas and creating the solution, students will develop a system or systems to solve that problem in the form of a product or solution. This is an inherent part of each objective.

RELATED CONCEPTS

Related concepts promote deep learning. They are grounded in specific disciplines and are useful for exploring key concepts in greater detail. Inquiry into related concepts helps students develop more complex and sophisticated conceptual understanding. Related concepts may arise from the subject matter of a unit or the craft of a subject—its features and processes.

Adaptation	Adaptation involves incorporating ideas found in one product into the development of a new product.
Collaboration	Collaboration involves two or more people sharing expertise and experience, working together to solve a problem and realize shared goals.
Ergonomics	Ergonomics is the application of scientific information and understanding of how humans relate to products, systems, interfaces and environments.
Evaluation	In design, evaluation involves the gathering and processing of data to determine an action. Evaluation involves feedback, which can be used to control, revise or modify.
Form	Form concerns the overall shape and configuration of a product. It relates to aspects such as aesthetics, shape, colour, and texture.
Function	The function of a solution refers to what it has been designed to do and how effective it is at enabling that action to be performed.
Innovation	Innovation is the successful diffusion of an invention into the marketplace.
Invention	An invention is an entirely novel product or a feature of a product that is unique.
Markets and Trends	Markets can be considered as sectors and segments comprised of groups of individuals with similar needs. Trends involve short- and long-term patterns of consumer behavior.

Perspective	Perspective relates to the point of view of various stakeholders involved in solving a problem. Stakeholders can have different perspectives and can include clients, target audiences, focus groups, consumers, manufacturers and experts.
Resources	Resources relate to the supply of a commodity. In MYP design, these commodities can be classified as information, materials and equipment.
Sustainability	<p>Sustainability is the capacity to endure, which can have environmental, economic and social dimensions. In MYP design, sustainability can be considered in the following ways.</p> <ul style="list-style-type: none"> Green and Eco-design Sustainable consumption Sustainable design Sustainable development Sustainable innovation Sustainable production

Global Contexts

Global contexts direct learning towards independent and shared inquiry into our common humanity and shared guardianship of the planet. Using the world as the broadest context for learning, MYP design can develop meaningful explorations. Many inquiries into design concepts naturally focus on scientific and technical innovation. However, courses in this subject group should, over time, offer students multiple opportunities to explore all MYP global contexts in relationship to the aims and objectives of the subject group.

MYP Global Contexts

<p style="text-align: center;">identities and relationships</p> <p style="text-align: center;"><i>Who am I? Who are we?</i></p>	<p>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.</p>	<p>Possible explorations to develop:</p> <ul style="list-style-type: none"> • competition and cooperation; teams, affiliation and leadership • identity formation, self-esteem, status, roles and role models • personal efficacy and agency; attitudes, motivations, independence; happiness and the good life • physical, psychological and social development, transitions, health and well-being, lifestyle choices • human nature and human dignity, moral reasoning and ethical judgment, consciousness and mind
<p style="text-align: center;">orientation in time and space</p> <p style="text-align: center;"><i>What is the meaning of 'where' and 'when'?</i></p>	<p>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.</p>	<p>Possible explorations to develop:</p> <ul style="list-style-type: none"> • civilizations and social histories, heritage; pilgrimage, migration, displacement and exchange • epochs, eras, turning points and 'big history' • scale, duration, frequency and variability • peoples, boundaries, exchange and interaction • natural and human landscapes and resources • evolution, constraints and adaptation
<p style="text-align: center;">personal and cultural expression</p> <p style="text-align: center;"><i>What is the nature and purpose of creative expression?</i></p>	<p>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.</p>	<p>Possible explorations to develop:</p> <ul style="list-style-type: none"> • artistry, craft, creation, beauty • products, systems and institutions • social constructions of reality; philosophies and ways of life; belief systems; ritual and play • critical literacy, languages and linguistic systems; histories of ideas, fields and disciplines; analysis and argument • metacognition and abstract thinking • entrepreneurship, practice and competency

MYP Global Contexts

<p>scientific and technical innovation</p> <p><i>How do we understand the worlds in which we live?</i></p>	<p>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.</p>	<p>Possible explorations to develop:</p> <ul style="list-style-type: none"> • systems, models, methods; products, processes and solutions • adaptation, ingenuity and progress • opportunity, risk, consequences and responsibility • modernization, industrialization and engineering • digital life, virtual environments and the information age • the biological revolution • mathematical puzzles, principles and discoveries
<p>globalization and sustainability</p> <p><i>How is everything connected?</i></p>	<p>Students will explore the interconnectedness of human-made systems and communities; the relationship between local and global processes; how local experiences mediate the global; reflect on the opportunities and tensions provided by world-interconnectedness; the impact of decision-making on humankind and the environment.</p>	<p>Possible explorations to develop:</p> <ul style="list-style-type: none"> • markets, commodities and commercialization • human impact on the environment • commonality, diversity and interconnection • consumption, conservation, natural resources and public goods • population and demography • urban planning, strategy and infrastructure
<p>fairness and development</p> <p><i>What are the consequences of our common humanity?</i></p>	<p>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.</p>	<p>Possible explorations to develop:</p> <ul style="list-style-type: none"> • democracy, politics, government and civil society • inequality, difference and inclusion • human capability and development ; social entrepreneurs • rights, law, civic responsibility and the public sphere • justice, peace and conflict management • power and privilege • authority , security and freedom • imagining a hopeful future

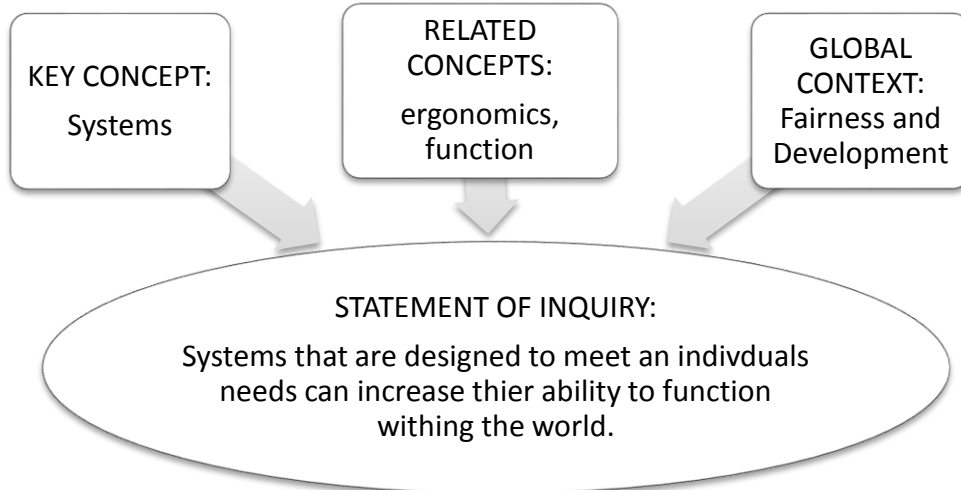
Teaching and Learning Through Inquiry

Statements of Inquiry

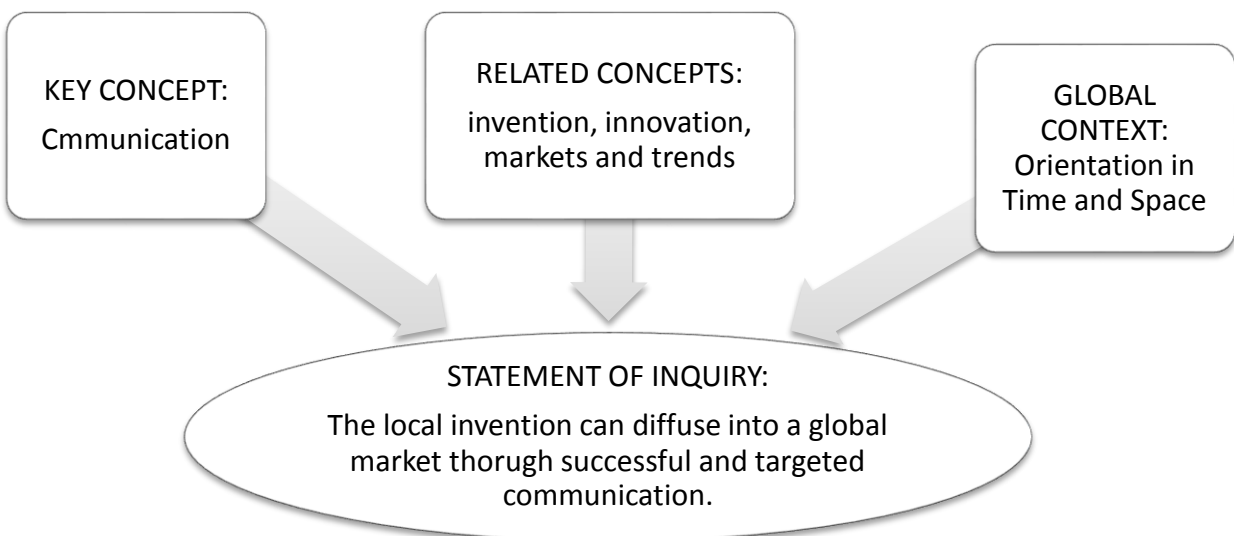
A statement of inquiry sets conceptual understanding in a global context in order to frame classroom inquiry and direct purposeful learning



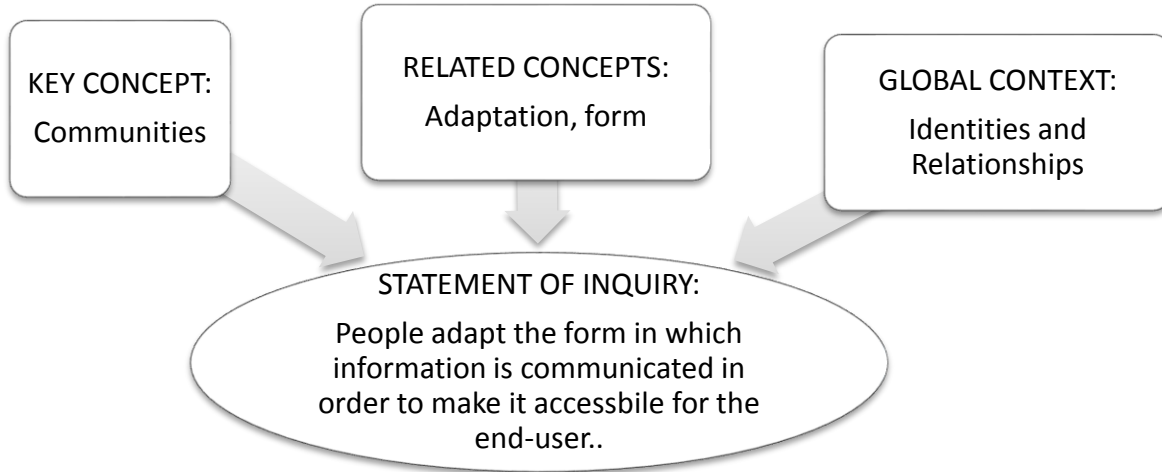
Possible Project/Study: Designing a product for someone with a disability



Possible Project/Study: Promotion of a product/service within a new market

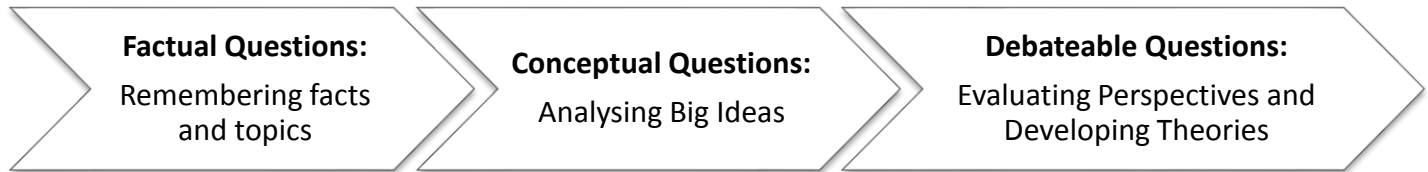


Possible Project/Study: Using technology to communicate



Inquiry Questions

Teachers and students use statements of inquiry to help them identify factual, conceptual and debatable inquiry questions. Inquiry questions give direction to teaching and learning, and they help to organize and sequence learning experiences.



Factual Questions	Conceptual Questions	Debatable Questions
<ul style="list-style-type: none"> • Which electronic components can be used to create a sensory circuit? • What are the general rules of web design? • How can the nutritional value of a food product be determined? • What are the different aspects of form? 	<ul style="list-style-type: none"> • How do inventions impact our lives? • What is the value of negative space? • Can digital products be sustainable? 	<ul style="list-style-type: none"> • When is form more important than function? • Should all products be designed for everyone? • Are any ideas new, or are they new versions of old designs?

Design Learning Objectives

The objectives of any MYP subject state the specific targets that are set for learning in the subject. They define what the student will be able to accomplish as a result of studying the subject.

The objectives of MYP sciences encompass the factual, conceptual, procedural and metacognitive dimensions of knowledge.

Each objective is elaborated by a number of **strands**; a strand is an aspect or indicator of the learning expectation.

Together these objectives reflect the holistic nature of science and the real-world work of scientists. They enable students to engage with all aspects of science, either through individual objectives or connected processes.

Subject groups **must** address all strands of **all** four objectives **at least twice** in each year of the MYP.

In order to keep track of the standards used in each unit and the number of times it has been used, teachers/PLTs may want to develop a system or check list. Below is an example.

OBJECTIVE	STRAND	UNIT WHERE IT IS ASSESSED		
Knowing and understanding	1			
	2			
	3			
	4			

Objective A. Inquiring and Analyzing

Students are presented with a design situation, from which they identify a problem that needs to be solved. They analyse the need for a solution and conduct an inquiry into the nature of the problem.

In order to reach the aims of design, students should be able to:

- i. explain and justify the need for a solution to a problem for a specified client/target audience
- ii. identify and prioritize the primary and secondary research needed to develop a solution to the problem
- iii. analyse a range of existing products that inspire a solution to the problem
- iv. develop a detailed design brief which summarizes the analysis of relevant research.

Achvmt Level	Level Descriptor
0	The student does not reach a standard described by any of the descriptors below.
1-2	The student: i. states the need for a solution to a problem for a specified client/target audience ii. develops a basic design brief, which states the findings of relevant research.
3-4	The student: i. outlines the need for a solution to a problem for a specified client/target audience ii. outlines a research plan, which identifies primary and secondary research needed to develop a solution to the problem, with some guidance iii. analyses one existing product that inspires a solution to the problem iv. develops a design brief, which outlines the analysis of relevant research.
5-6	The student: i. explains the need for a solution to a problem for a specified client/target audience ii. constructs a research plan, which identifies and prioritizes primary and secondary research needed to develop a solution to the problem, with some guidance iii. analyses a range of existing products that inspire a solution to the problem iv. develops a design brief, which explains the analysis of relevant research.
7-8	The student: i. explains and justifies the need for a solution to a problem for a client/ target audience ii. constructs a detailed research plan, which identifies and prioritizes the primary and secondary research needed to develop a solution to the problem independently iii. analyses a range of existing products that inspire a solution to the problem in detail iv. develops a detailed design brief, which summarizes the analysis of relevant research.

Objective B. Developing Ideas

Students write a detailed specification, which drives the development of a solution. They present the solution.

In order to reach the aims of design, students should be able to:

- i. develop a design specification which clearly states the success criteria for the design of a solution
- ii. develop a range of feasible design ideas which can be correctly interpreted by others
- iii. present the final chosen design and justify its selection
- iv. develop accurate and detailed planning drawings/diagrams and outline the requirements for the creation of the chosen solution.

Achievment Level	Level Descriptor
0	The student does not reach a standard described by any of the descriptors below.
1-2	The student: i. lists some basic design specifications for the design of a solution ii. presents one design, which can be interpreted by others iii. creates incomplete planning drawings/diagrams.
3-4	The student: i. lists some design specifications, which relate to the success criteria for the design of a solution ii. presents a few feasible designs, using an appropriate medium(s) or annotation, which can be interpreted by others iii. justifies the selection of the chosen design with reference to the design specification iv. creates planning drawings/diagrams or lists requirements for the creation of the chosen solution.
5-6	The student: i. develops design specifications, which outline the success criteria for the design of a solution ii. develops a range of feasible design ideas, using an appropriate medium(s) and annotation, which can be interpreted by others iii. presents the chosen design and justifies its selection with reference to the design specification iv. develops accurate planning drawings/diagrams and lists requirements for the creation of the chosen solution.
7-8	The student: i. develops detailed design specifications, which explain the success criteria for the design of a solution based on the analysis of the research ii. develops a range of feasible design ideas, using an appropriate medium(s) and detailed annotation, which can be correctly interpreted by others iii. presents the chosen design and justifies fully and critically its selection with detailed reference to the design specification iv. develops accurate and detailed planning drawings/diagrams and outlines requirements for the creation of the chosen solution.

Objective C: Creating the Solution

Students plan the creation of the chosen solution and follow the plan to create a prototype sufficient for testing and evaluation.

In order to reach the aims of design, students should be able to:

- i. construct a logical plan, which describes the efficient use of time and resources, sufficient for peers to be able to follow to create the solution
- ii. demonstrate excellent technical skills when making the solution
- iii. follow the plan to create the solution, which functions as intended
- iv. fully justify changes made to the chosen design and plan when making the solution
- v. present the solution as a whole, either: a. in electronic form, or through photographs of the solution from different angles, showing details.

Achvmt Level	Level Descriptor
0	The student does not reach a standard described by any of the descriptors below.
1-2	The student: i. demonstrates minimal technical skills when making the solution ii. creates the solution, which functions poorly and is presented in an incomplete form .
3-4	The student: i. constructs a plan that contains some production details, resulting in peers having difficulty following the plan ii. demonstrates satisfactory technical skills when making the solution iii. creates the solution, which partially functions and is adequately presented iv. outlines changes made to the chosen design and plan when making the solution.
5-6	The student: i. constructs a logical plan , which considers time and resources, sufficient for peers to be able to follow to create the solution ii. demonstrates competent technical skills when making the solution iii. creates the solution, which functions as intended and is presented appropriately iv. describes changes made to the chosen design and plan when making the solution.
7-8	The student: i. constructs a detailed and logical plan , which describes the efficient use of time and resources, sufficient for peers to be able to follow to create the solution ii. demonstrates excellent technical skills when making the solution. iii. follows the plan to create the solution, which functions as intended and is presented appropriately iv. fully justifies changes made to the chosen design and plan when making the solution.

Objective D: Evaluating

Students design tests to evaluate the solution, carry out those tests and objectively evaluate its success. Students identify areas where the solution could be improved and explain how their solution will impact on the client or target audience.

In order to reach the aims of design, students should be able to:

- i. design detailed and relevant testing methods, which generate data, to measure the success of the solution
- ii. critically evaluate the success of the solution against the design specification
- iii. explain how the solution could be improved
- iv. explain the impact of the solution on the client/target audience.

Achievmt Level	Level Descriptor
0	The student does not reach a standard described by any of the descriptors below.
1-2	The student: i. designs a testing method , which is used to measure the success of the solution ii. states the success of the solution.
3-4	The student: i. designs a relevant testing method , which generates data, to measure the success of the solution ii. outlines the success of the solution against the design specification based on relevant product testing iii. outlines how the solution could be improved iv. outlines the impact of the solution on the client/target audience.
5-6	The student: i. designs relevant testing methods , which generate data, to measure the success of the solution ii. explains the success of the solution against the design specification based on relevant product testing iii. describes how the solution could be improved iv. explains the impact of the solution on the client/target audience, with guidance .
7-8	The student: i. designs detailed and relevant testing methods , which generate data, to measure the success of the solution ii. critically evaluates the success of the solution against the design specification based on authentic product testing iii. explains how the solution could be improved iv. explains the impact of the product on the client/target audience.

Assessment in the MYP

Assessment practices in the MYP aim to

- support student learning by providing consistent feedback on the learning process
- provide opportunities for students to demonstrate transfer of skills across disciplines
- develop critical and creative thinking skills
- assign the most accurate achievement level for student performance, rather than averaging achievement levels over a given period of time
- assess student understanding at the end of a course

Choosing from a range of **assessment strategies**, teachers can devise **assessment tasks** that give students opportunities to show clearly what they can achieve in relation to the Statement of Inquiry, the MYP objectives, and state standards of the unit. Teachers will ensure that they document and record student performance using various **assessment tools**.

ASSESSMENT STRATEGIES	ASSESSMENT TASKS	ASSESSMENT TOOLS
<p>Observation Whole class or individual; as a non-participant or while engaged</p> <p>Selected Response Asking specific or general questions to elicit responses from students</p> <p>Open Ended Tasks Provide students with a stimulus and ask students to provide an original response – presentations, diagrams</p> <p>Performance Allow students to show that they can do something with the knowledge that they have gained</p> <p>Process Journals Encourages reflection and metacognition in students; allows for communication between student and teacher</p> <p>Portfolio Assessment Collection of work that shows student mastery of content</p>	<p>Composition Musical, physical, or artistic</p> <p>Creations of Solutions In response to given problems</p> <p>Essays</p> <p>Examinations</p> <p>Questionnaires</p> <p>Investigations</p> <p>Research</p> <p>Presentations Verbal (oral or written) or graphic; uses various media</p>	<p>Anecdotal Records Brief written notes regarding whole class or individual performance</p> <p>Continuums Visual representation of students development that helps identify next stages of learning</p> <p>Rubrics Measure students' performance at a variety of levels</p> <p>Examples Using student work as concrete examples of performance at various achievement levels</p> <p>Checklists Check off when students demonstrate a particular response to a task</p>

Developing Task Specific Rubrics

WHY?

1. Brings transparency to the assessment process for students, teachers, parents
2. Provides clear measurable evidence of learning
3. Can be used year after year
4. Can be modified as the units are revised
5. Contribute to the teacher reflections of units

HOW?

1. Study the assessment criteria; these are very vague and generalized
2. Study your assessment task
3. Redraft the level descriptors to match your specific assessment task for the unit

THINGS TO CONSIDER

1. When sharing the rubrics with students, make sure they are written in student-friendly language. Rubrics must be written so that students understand them.
2. Students should be able to accomplish the highest level of achievement. Be careful not to design assessment tasks that are impossible for students.
3. The rubrics should be standardized across the course. Teachers and students should see consistency across every section of the course.

RUBRIC EXAMPLES

The table below shows an example of a task-specific clarification for Criterion B for a product design project.

Level	Level Descriptor	Task Specific Clarification
0	The student does not reach a standard described by any of the descriptors below.	You did not reach a standard described by any of the descriptors below.
1-2	The student: <ol style="list-style-type: none"> lists some basic design specifications for the design of a solution presents one design, which can be interpreted by others creates incomplete planning drawings/diagrams. 	You were able to: <ol style="list-style-type: none"> 1. List a few basic success criteria for the design of a solution relating to size color style and safety. 2. Present one design idea that is sketched clearly but is not annotated 3. Create planning drawings/diagrams that are inaccurate not to scale and lack dimensions
3-4	The student: <ol style="list-style-type: none"> lists some design specifications, which relate to the success criteria for the design of a solution presents a few feasible designs, using an appropriate medium(s) or annotation, which can be interpreted by others justifies the selection of the chosen design with reference to the design specification creates planning drawings/diagrams or lists requirements for the creation of the chosen solution. 	You were able to: <ol style="list-style-type: none"> 1. Construct a list of success criteria for the design of a solution that relates to all of the relevant research you identified in your inquiry. 2. Present at least 3 feasible design ideas that were either sketched clearly or explained all of the key features in the designs 3. Outline the main reasons for choosing the design with reference to the design specification. 4. Create an orthographic drawing that includes the dimensions or create a cutting list for the chosen solution

Achievement Levels and Assigning Grades

Each criterion is divided into various achievement levels. The level descriptors for each band describe a range of student performance in the various strands of each objective. At the lowest levels, student achievement in each of the strands will be minimal. As the numerical levels increase, the level descriptors describe greater achievement levels in each of the strands.

When applying the assessment criteria to student performance, the teacher should determine whether the first descriptor describes the performance. If the student work exceeds the expectations of the first descriptor, the teacher should determine whether it is described by the second descriptor. This should continue until the teacher arrives at a descriptor that does not describe the student work; the work will then be described by the previous descriptor. In certain cases, it may appear that the student has not fulfilled all of the descriptors in a lower band but has fulfilled some in a higher band. In those cases, teachers must use their professional judgment in determining the descriptor that best fits the student's performance.

Measuring Student Growth throughout the Course

MYP assessment focuses on student understanding at the end of the course but also requires teachers to determine the most accurate demonstration of student understanding. This means recording and tracking student performance on each criterion as it is assessed for the duration of the course. Remember, subject areas must address all strands of all four assessment criteria at least twice each year. This allows students and teachers to measure growth over time.

An example of one monitoring system is shown below. In this model, teachers can include students in the process by asking them to maintain the record of achievement and allow time for reflection on performance.

Criterion	Unit	Task	Grade

Assessment in MYP Design Classes

Design situations

An understanding of design and the design cycle is an iterative and developmental process. As such, students need support and structure in order to develop their ability to solve real-life design problems. However, in earlier MYP years, this is not always possible and students do not always have the required knowledge, understanding and skills.

In earlier years of the programme, students can complete design challenges that focus on particular strands of an objective. Design challenges provide a key strategy to scaffold teaching and learning.

A **design challenge** is typically set within a contrived situation and has comparatively weak links to real life. The nature of the challenge will be given to students by the teacher, who will lead them through the design cycle process to develop a product. The challenge will be focused and specific with limited scope for different outcomes.

In later years, MYP design courses should address design problems.

A **design problem** is a real-life problem that needs to be solved for a specific client or a target market. The nature of the problem will be explored by students, who will consider a variety of ways to approach and investigate possible solutions. The problem will include physical or functional requirements that all feasible solutions must meet. Real-life situations that are relevant to students' lives and local reality pose interesting and provoking problems to solve.

Recommended design tasks

The use of different types of design tasks are recommended to frame teaching and learning in design. The task types stated below are typical activities used to equip students with the knowledge, skills and understanding needed to successfully design solutions to problems. They are designed to give opportunity for students to explore the design cycle and to gain experience of how design relates to real life.

Design project

The design project is a compulsory component of **all** MYP design courses.

This task must be assessed using **all** four criteria. It must be presented as a design folder that is clearly divided into four sections: one per criterion. It must begin with the student's inquiry into the problem and end with the evaluation of the product/solution. Students are presented with a design situation by the teacher, from which they identify their own problem.

Other recommended tasks include the **product/system study** and the **design and make**.

Approaches to Learning Skills

Through approaches to learning (ATL) in IB programmes, students develop skills that have relevance across the curriculum that help them “learn how to learn”. ATL skills can be learned and taught, improved with practice and developed incrementally. They provide a solid foundation for learning independently and with others. ATL skills help students prepare for, and demonstrate learning through, meaningful assessment. They provide a common language that students and teachers can use to reflect on, and articulate on, the process of learning. All MYP teachers are responsible for integrating and explicitly teaching ATL skills.

Well-designed learning engagements and assessments provide rich opportunities for students to practise and demonstrate ATL skills. Each MYP unit explicitly identifies ATL skills around which teaching and learning can focus, and through which students can authentically demonstrate what they are able to do. Formative assessments provide important feedback for developing discrete skills, and many ATL skills support students as they demonstrate their achievements in summative assessments of subject group objectives.

ATL Skill Indicators Important to Design

Category	Skill Indicator
Thinking skills	Analyse products and suggest how to improve them.
Social skills	Demonstrate active listening when interviewing clients.
Communication skills	Develop detailed design drawings for a manufacturer.
Self-management skills	Plan the creation of a solution.
Research skills	Find out how to translate 2D storyboards into 3D animations.

ATL Skills Demonstrated in Design

Approaches to learning (ATL)

Thinking (critical thinking): observe users interact with a solution in order to evaluate its success

Communication (information literacy): evaluate sources of secondary information to ensure their reliability and relevance

Category	Cluster	Skills
Research	Information Literacy Skills	<p>Finding, interpreting, judging and creating information</p> <ul style="list-style-type: none"> • Collect, record and verify data • Access information to be informed and inform others • Make connections between various sources of information • Understand the benefits and limitations of personal sensory learning preferences when accessing, processing and recalling information • Use memory techniques to develop long-term memory • Present information in a variety of formats and platforms • Collect and analyse data to identify solutions and make informed decisions • Process data and report results • Evaluate and select information sources and digital tools based on their appropriateness to specific tasks • Understand and use technology systems • Use critical-literacy skills to analyse and interpret media communications • Understand and implement intellectual property rights • Create references and citations, use footnotes/endnotes and construct a bibliography according to recognized conventions • Identify primary and secondary sources
	Media Literacy Skills	<p>Interacting with media to use and create ideas and information</p> <ul style="list-style-type: none"> • Locate, organize, analyse, evaluate, synthesize and ethically use information from a variety of sources and media (including digital social media and online networks) • Demonstrate awareness of media interpretations of events and ideas (including digital social media) • Make informed choices about personal viewing experiences • Understand the impact of media representations and modes of presentation • Seek a range of perspectives from multiple and varied sources • Communicate information and ideas effectively to multiple audiences using a variety of media and formats • Compare, contrast and draw connections among (multi)media resources

Category	Cluster	Skills
Communication	Communication Skills	<p>Exchanging thoughts, messages and information effectively through interaction</p> <ul style="list-style-type: none"> • Give and receive meaningful feedback • Use intercultural understanding to interpret communication • Use a variety of speaking techniques to communicate with a variety of audiences • Use appropriate forms of writing for different purposes and audiences • Use a variety of media to communicate with a range of audiences • Interpret and use effectively modes of non-verbal communication • Negotiate ideas and knowledge with peers and teachers • Participate in, and contribute to, digital social media networks • Collaborate with peers and experts using a variety of digital environments and media • Share ideas with multiple audiences using a variety of digital environments and media
		<p>Reading, writing and using language to gather and communicate information</p> <ul style="list-style-type: none"> • Read critically and for comprehension • Read a variety of sources for information and for pleasure • Make inferences and draw conclusions • Use and interpret a range of discipline-specific terms and symbols • Write for different purposes • Understand and use mathematical notation • Paraphrase accurately and concisely • Preview and skim texts to build understanding • Take effective notes in class • Make effective summary notes for studying • Use a variety of organizers for academic writing tasks • Find information for disciplinary and interdisciplinary inquiries, using a variety of media • Organize and depict information logically • Structure information in summaries, essays and reports
Social	Collaboration Skills	<p>Working effectively with others</p> <ul style="list-style-type: none"> • Use social media networks appropriately to build and develop relationships • Practise empathy • Delegate and share responsibility for decision-making • Help others to succeed • Take responsibility for one's own actions • Manage and resolve conflict, and work collaboratively in teams • Build consensus • Make fair and equitable decisions • Listen actively to other perspectives and ideas • Negotiate effectively • Encourage others to contribute • Exercise leadership and take on a variety of roles within groups • Give and receive meaningful feedback • Advocate for one's own rights and needs

Category	Cluster	Skills
Self-Management	Organization Skills	<p>Managing time and tasks effectively</p> <ul style="list-style-type: none"> • Plan short- and long-term assignments; meet deadlines • Create plans to prepare for summative assessments (examinations and performances) • Keep and use a weekly planner for assignments • Set goals that are challenging and realistic • Plan strategies and take action to achieve personal and academic goals • Bring necessary equipment and supplies to class • Keep an organized and logical system of information files/notebooks • Use appropriate strategies for organizing complex information • Understand and use sensory learning preferences (learning styles) • Select and use technology effectively and productively
	Affective Skills	<p>Managing state of mind</p> <ul style="list-style-type: none"> • Mindfulness <ul style="list-style-type: none"> – Practise focus and concentration – Practise strategies to develop mental focus – Practise strategies to overcome distractions • Perseverance <ul style="list-style-type: none"> – Demonstrate persistence and perseverance – Practise delaying gratification • Emotional management <ul style="list-style-type: none"> – Practise strategies to overcome impulsiveness and anger – Practise strategies to prevent and eliminate bullying – Practise strategies to reduce stress and anxiety • Self-motivation <ul style="list-style-type: none"> – Practise analysing and attributing causes for failure – Practise managing self-talk – Practise positive thinking • Resilience <ul style="list-style-type: none"> – Practise “bouncing back” after adversity, mistakes and failures – Practise dealing with disappointment and unmet expectations – Practise dealing with change
	Reflection Skills	<p>(Re)considering the process of learning; choosing and using ATL skills</p> <ul style="list-style-type: none"> • Develop new skills, techniques and strategies for effective learning • Identify strengths and weaknesses of personal learning strategies • Demonstrate flexibility in the selection and use of learning strategies • Consider content (What did I learn about today? What don't I yet understand? What questions do I have now?) • Consider ATL skills development (What can I already do? How can I share my skills to help peers who need more practice? What will I work on next?) • Consider personal learning strategies (What can I do to become a more efficient and effective learner? How can I become more flexible in my choice of learning strategies? What factors are important for helping me learn well?) • Focus on the process of creating by imitating the work of others • Consider ethical, cultural and environmental implications • Keep a journal to record reflections

Category	Cluster	Skills
Thinking	Critical Thinking Skills	<p>Analysing and evaluating issues and ideas</p> <ul style="list-style-type: none"> • Practise observing carefully in order to recognize problems • Gather and organize relevant information to formulate an argument • Recognize unstated assumptions and bias • Interpret data • Evaluate evidence and arguments • Recognize and evaluate propositions • Draw reasonable conclusions and generalizations • Test generalizations and conclusions • Revise understanding based on new information and evidence • Evaluate and manage risk • Formulate factual, topical, conceptual and debatable questions • Consider ideas from multiple perspectives • Develop contrary or opposing arguments • Analyse complex concepts and projects into their constituent parts and synthesize them to create new understanding • Propose and evaluate a variety of solutions • Identify obstacles and challenges • Use models and simulations to explore complex systems and issues • Identify trends and forecast possibilities • Troubleshoot systems and applications
	Creative Thinking Skills	<p>Generating novel ideas and considering new perspectives</p> <ul style="list-style-type: none"> • Use brainstorming and visual diagrams to generate new ideas and inquiries • Consider multiple alternatives, including those that might be unlikely or impossible • Create novel solutions to authentic problems • Make unexpected or unusual connections between objects and/or ideas • Design improvements to existing machines, media and technologies • Design new machines, media and technologies • Make guesses, ask “what if” questions and generate testable hypotheses • Apply existing knowledge to generate new ideas, products or processes • Create original works and ideas; use existing works and ideas in new ways • Practise flexible thinking—develop multiple opposing, contradictory and complementary arguments • Practise visible thinking strategies and techniques • Generate metaphors and analogies
	Transfer Skills	<p>Using skills and knowledge in multiple contexts</p> <ul style="list-style-type: none"> • Use effective learning strategies in subject groups and disciplines • Apply skills and knowledge in unfamiliar situations • Inquire in different contexts to gain a different perspective • Compare conceptual understanding across multiple subject groups and disciplines • Make connections between subject groups and disciplines • Combine knowledge, understanding and skills to create products or solutions • Transfer current knowledge to learning of new technologies • Change the context of an inquiry to gain different perspectives

Unit Title	
Course/Grade Level	
Teachers	
Length of Unit	

Stage 1 Integrate statement of inquiry, global context and inquiry questions

Key Concept	Related Concepts
Choose 1 (maybe 2) from the list	Choose 2 (maybe 3) from the list.

Global Context	Choose 1 from the list provided.
Explanation for Global Context	Include any bullet points from the list that students will explore in this unit.

Statement of Inquiry
A clear concise statement that includes the Key Concept and the Related Concept with regards to the Global Context.

Inquiry Questions	
Factual	Develop a question that rooted in the content, and is at the recall/remember level. Expect students to demonstrate understanding.
Conceptual	Develop a question that requires students to analyze the new knowledge in the context of the course.
Debatable	Develop a question that requires students to apply the new knowledge in a way that reaches beyond your course and connects the concept to other disciplines. This question should connect to your Statement of Inquiry.

Assessment

What task(s) will allow students the opportunity to respond to the unit question?

What will constitute acceptable evidence of understanding? How will students show what they have understood?

Each unit must include one summative assessment that will be graded on the IB subject specific criterion rubrics that are located in your subject guide.

If you are assigning a multiple choice test, it does not meet the assessment requirement unless it is graded with the IB rubrics.

If you assign multiple summative assessments, only include the assessment evaluated with the IB rubrics on the unit planner.

Briefly describe the assessment in this box.

Which specific MYP objectives will be addressed during this unit?

Copy and paste the MYP objectives from your subject guide.

Specific objectives should be chosen from the criterion. List the specific bullet points from those criteria that the unit will address. The bullets can come from multiple criteria.

Avoid saying "Criterion A" or "Investigate" because you may not be teaching every strand of that objective.

Which MYP assessment criteria will be used?

Identify the specific criterion rubric that will be used. This should be the Criterion that has the most bullet points listed above. Here you can say "Criterion A" or "Investigate".

Stage 2 Backward planning: From the assessment to the learning activities through inquiry

Content

What knowledge and/or skills (from the course overview) are going to be used to enable the student to respond to the unit question?

What (if any) state, provincial, district, or local standards/skills are to be addressed? How can they be unpacked to develop the significant concept(s) for stage 1?

You can list NCSCOS or Common Core Standards.

These can be copied and pasted.

<p>Learning experiences</p> <p>How will students know what is expected of them? Will they see examples, rubrics, templates?</p> <p>How will students acquire the knowledge and practise the skills required? How will they practise applying these?</p> <p>Do the students have enough prior knowledge? How will we know?</p>	<p>Teaching strategies</p> <p>How will we use formative assessment to give students feedback during the unit?</p> <p>What different teaching methodologies will we employ?</p> <p>How are we differentiating teaching and learning for all? How have we made provision for those learning in a language other than their mother tongue? How have we considered those with special educational needs?</p>
<p>Big Ideas to cover in these boxes:</p> <p>Differentiation strategies, literacy instruction, 21st century skill integration, technology integration.</p>	
<p>Just answer the questions above.</p>	<p>Just answer the questions above.</p>

Approaches to Learning		
Category	Cluster	Skill
<p>Identify the category, cluster and the specific skills you will teach. Can be bulleted list.</p>		
<p>Explanation of Instruction</p>	<p>Explain exactly how you will teach the skills you identified.</p>	

Learner Profile Traits Encouraged	Explanation of Inclusion
<p>Choose from the list.</p>	<p>Explain how this will be a part of the instruction.</p>

Opportunities for Volunteerism and Community Service
<p>Consider service opportunities, locally or globally, that connect with this topic. Could this unit develop into a service project for your students? How?</p>

Resources

What resources are available to us?

How will our classroom environment, local environment and/or the community be used to facilitate students' experiences during the unit?

Be very specific when listing materials.

Imagine someone from another country reading your unit planner, how would they identify the resources that you have listed?

Include titles of books, textbooks, videos, etc.

Ongoing reflections and evaluation

In keeping an ongoing record, consider the following questions.

Students and teachers

What did we find compelling? Were our disciplinary knowledge/skills challenged in any way?

What inquiries arose during the learning? What, if any, extension activities arose?

How did we reflect—both on the unit and on our own learning?

Possible connections

How successful was the collaboration with other teachers within my subject group and from other subject groups?

What interdisciplinary understandings were or could be forged through collaboration with other subjects?

Assessment

Were students able to demonstrate their learning?

How did the assessment tasks allow students to demonstrate the learning objectives identified for this unit? How did I make sure students were invited to achieve at all levels of the criteria descriptors?

Are we prepared for the next stage?

Data collection

How did we decide on the data to collect? Was it useful?

Include things to consider before the unit is taught.

What questions will students ask? What materials will I need? How can I incorporate other disciplines?

Include Post-teaching reflections. What went well? What can be improved?

As you reflect and revise unit planner, keep copies of the old unit planners as a way to measure growth and change.

IDEA-- Type each reflection in different color each year.

Then the file would only be saved once, but the reflections would be easy to identify each year.