

International Baccalaureate

IB Americas

Implementation of the programme

Understanding the MYP: The New
Chapter

Category 3

Asunción, Paraguay, St Anne's School

June 2014

English

Williams Amaya and Susana Arienti

Teacher Training Workshop

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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.

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Understanding the MYP: The New Chapter

St Anne's School Asunción, Paraguay,
June 2014

Workshop leaders Williams Amaya and
Susana Arienti

MYP On-site Workshop, St Anne's School

Workshop's Agenda

ROOM: 504 - Workshop Leader: Mrs. Susana Arienti

Day 1: Thursday, June 26, 2014

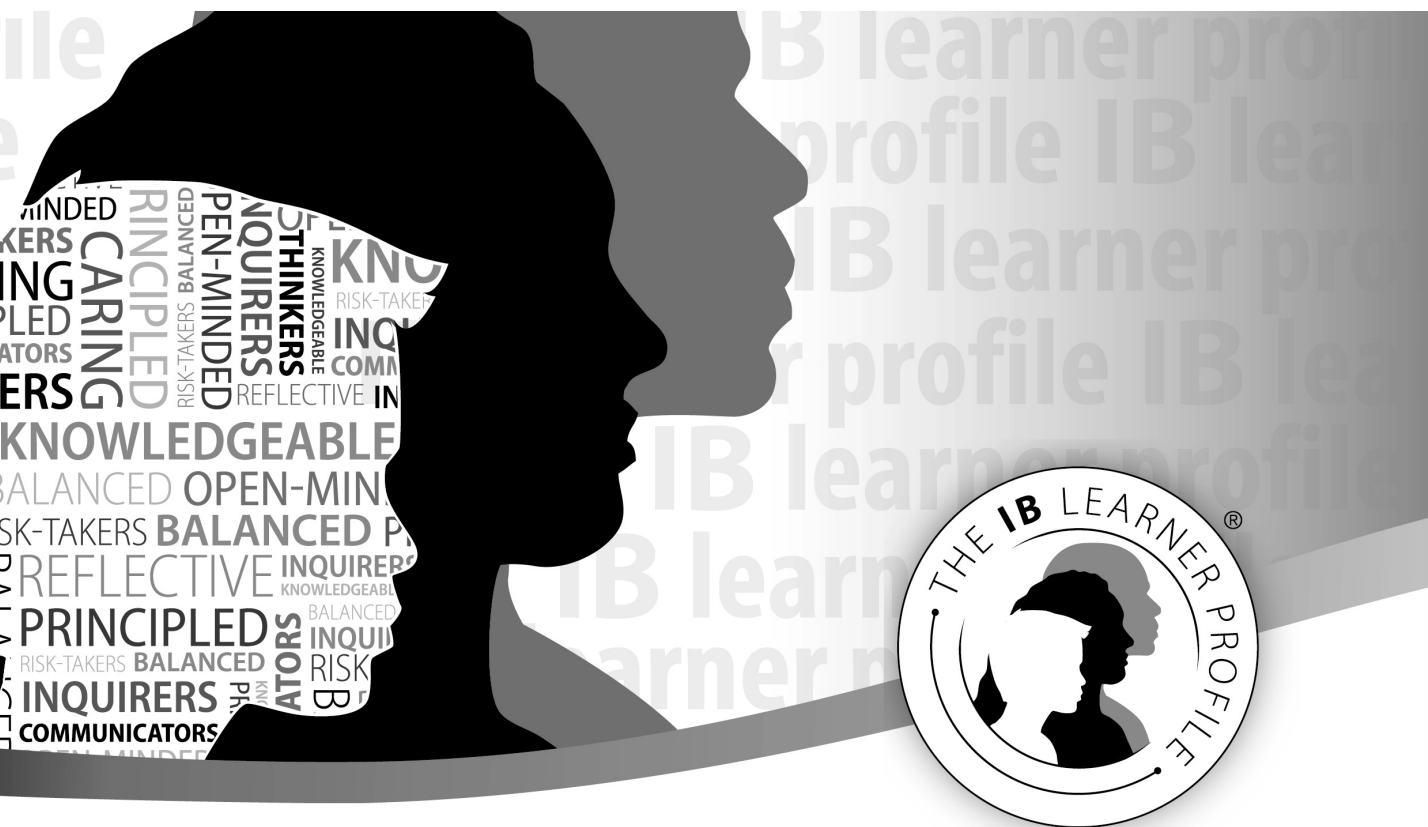
Time	Session	Content	Objectives
8:00-9:30	1	The Middle Years Programme: The next Chapter. The new Curricular Model. Subject flexibility. IB Community Learner's profile in the School and in the classroom.	<ul style="list-style-type: none"> • To reflect on the innovations introduced to the MYP and to analyse the impact of these changes in the School. • To develop schools' learning environments to promote lifelong learners through IB learner profile attributes. • To promote international mindedness and responsible action through a holistic approach.
9:30-9:50	Break		
9:50-11:20	2	Conceptual teaching and learning Key and related concepts	<ul style="list-style-type: none"> • To understand the importance of conceptual teaching and learning. • To understanding what key and related concepts are and are not, and identify key and related concepts in the development of a unit.
11:20-11:40	Break		
11:40-13:10	3	Inquiry based-learning. Global contexts.	<ul style="list-style-type: none"> • To reflect on the differences between traditional and context based teaching and learning • To understand and identify global contexts through reading and discussing • To examine the role of conceptual inquiry in constructing knowledge. • To create relevant, significant, challenging, and engaging student centred learning environments • To broaden perspectives across subject groups through concept-based learning.
13:10-14:10	Lunch		
14:10-15:40	4	Statement of inquiry. Inquiry questions: Factual, conceptual and debatable questions	<ul style="list-style-type: none"> • To understand how to formulate effective statements of inquiry. • To reflect on the best ways to relate statements of inquiry and inquiry questions.

Day 2: Friday, June 27, 2014

Time	Session	Content	Objectives
8:00-9:30	1	Subject specific aims and assessment criteria. Summative and formative assessment. Assessment planning and assessment tasks. The IB command terms	<ul style="list-style-type: none"> • To analyse the relationship between subject specific aims and assessment criteria.. • To encourage understanding of pedagogical processes for developing authentic summative assessments. • To suggest how students can show what they can do and what they know when tasks are relevant to their own lives.
9:30-9:50	Break		
9:50-11:20	2	ATL Skills framework.	<ul style="list-style-type: none"> • To reflect about the new functions assigned to ATL's in the MYP. • To identify ATL skills categories, clusters and their specific skills in subject-related action activities. • To design effective and rigorous curriculums through an ongoing process of horizontal and vertical articulation.
11:20-11:40	Break		
11:40-13:10	3	Action in the MYP: Teaching and learning through Inquiry. Learning experiences and teaching strategies. Formative assessment. Differentiation.	<ul style="list-style-type: none"> • To recognize the importance of formative assessments in introducing to students new skills that build toward success in mastering the summative task. To analyse how to introduce differentiation practices in the classroom.
13:10-14:10	Lunch		
14:10-15:40	4	MYP Assessment. Moderation, monitoring of assessment and e-assessment.	<ul style="list-style-type: none"> • To identify the holistic nature of MYP assessment. • To discover that the achievement levels of each criterion give teachers an idea of what the task is and how that task will be achieved. • To suggest that a holistic approach to assessment can help students to understand what is expected of them. • To analyse the new optional e-assessment process and its implications.

Day 3: Saturday, June 28, 2014

Time	Session	Content	Objectives
8:00-9:30	1	Interdisciplinary teaching and learning: Aims, criteria and ID unit planner.	<ul style="list-style-type: none"> • To understand the importance of interdisciplinary teaching and learning. • To analyse examples of interdisciplinary units.
9:30-10:00	Break		
10:00-11:30	2	Community and Personal Projects in the MYP	<ul style="list-style-type: none"> • To identify the needs of the community • To develop intellectual, personal, emotional and social skills through community and service initiatives • To design curriculum that promotes student reflection that engages them in the decision making processes about what is important. • To understand the changes in the Personal Project • Completion of the day's sessions and any remaining topics. <p>Questions & Answers</p>



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.

Appendix 1: ATL skills framework

The MYP extends IB approaches to learning (ATL) skills categories into 10 developmentally appropriate clusters. This framework provides common ground from which schools can develop their own ATL planning based on MYP units, student needs, and local circumstances and requirements.

ATL skills are often interconnected. Individual skills and skills clusters frequently overlap and may be relevant to more than one skill category.

Some of the key questions to be answered by students with respect to ATL skills include the following.

- What are my present skills in this area and what evidence do I have of my development?
- What skills can I improve?
- What new skills can I learn?

When specific ATL skills become an explicit focus for teaching and learning, students can begin to take responsibility for their own development. Over time, students can identify themselves and their competence in any learning strategy using terms like the following.

- Novice/beginning—students are introduced to the skill, and can watch others performing it (observation)
- Learner/developing—students copy others who use the skill and use the skill with scaffolding and guidance (emulation)
- Practitioner/using—students employ the skill confidently and effectively (demonstration)
- Expert/sharing—students can show others how to use the skill and accurately assess how effectively the skill is used (self-regulation)

A concept-driven curriculum that uses ATL skills effectively enables all students to become stronger, more self-regulated learners.

Communication	
I. Communication skills	
<p>How can students communicate through interaction?</p>	<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>How can students demonstrate communication through language?</p>	<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	
II. Collaboration skills	
How can students collaborate?	<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
Self-management	
III. Organization skills	
How can students demonstrate 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

IV. Affective skills	
<p>How can students manage their own state of mind?</p>	<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 – Practise being aware of body–mind connections • 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 “failing well” – Practise dealing with disappointment and unmet expectations – Practise dealing with change

V. Reflection skills	
How can students be reflective?	<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 (self-assessment) • Demonstrate flexibility in the selection and use of learning strategies • Try new ATL skills and evaluate their effectiveness • Consider content <ul style="list-style-type: none"> – What did I learn about today? – What don't I yet understand? – What questions do I have now? • Consider ATL skills development <ul style="list-style-type: none"> – 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 <ul style="list-style-type: none"> – 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

Research	
VI. Information literacy skills	
<p>How can students demonstrate information literacy?</p>	<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
VII. Media literacy skills	
<p>How can students demonstrate media literacy?</p>	<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

Thinking	
VIII. Critical-thinking skills	
How can students think critically?	<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

IX. Creative-thinking skills	
How can students be creative?	<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
X. Transfer skills	
How can students transfer skills and knowledge across disciplines and subject groups?	<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

Appendix 2: MYP-related concepts

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	Convention
Form	Function	Meaning	Message
Patterns	Purpose	Structure	Word choice
Phases 3–4			
Audience	Context	Convention	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 choice	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 <i>Individuals and societies</i> 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
Integrated sciences (drawn from biology, chemistry and physics)			
Balance	Consequences	Energy	Environment
Evidence	Form	Function	Interaction
Models	Movement	Patterns	Transformation

Mathematics			
Change	Equivalence	Generalization	Justification
Measurement	Model	Pattern	Quantity
Representation	Simplification	Space	System
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
Perspectives	Refinement	Space	Systems
Design			
Adaptation	Collaboration	Ergonomics	Evaluation
Form	Function	Innovation	Invention
Markets and trends	Perspective	Resources	Sustainability

Appendix 3: MYP command terms

MYP command terms define a range of learning objectives and assessment criteria in MYP subject groups. These instructional verbs indicate the level of thinking and type of performance (or behaviour) that is required of students. They are closely related to general and subject-specific ATL skills, and they make explicit a shared academic vocabulary that informs teaching and learning in the MYP.

The MYP incorporates the command terms used to establish learning outcomes and assessment objectives in the DP. Terms specific to the MYP are identified with an asterisk.

Command term	Definition
Analyse	Break down in order to bring out the essential elements or structure. To identify parts and relationships, and to interpret information to reach conclusions.
Annotate	Add brief notes to a diagram or graph.
Apply	Use knowledge and understanding in response to a given situation or real circumstances. Use an idea, equation, principle, theory or law in relation to a given problem or issue. (See also "Use".)
Calculate	Obtain a numerical answer showing the relevant stages in the working.
Classify	Arrange or order by class or category.
Comment	Give a judgment based on a given statement or result of a calculation.
Compare	Give an account of the similarities between two (or more) items or situations, referring to both (all) of them throughout.
Compare and contrast	Give an account of the similarities and differences between two (or more) items or situations, referring to both (all) of them throughout.
Construct	Display information in a diagrammatic or logical form.
Contrast	Give an account of the differences between two (or more) items or situations, referring to both (all) of them throughout.
Create*	To evolve from one's own thought or imagination, as a work or an invention.
Critique*	Provide a critical review or commentary, especially when dealing with works of art or literature. (See also "Evaluate".)
Deduce	Reach a conclusion from the information given.
Define	Give the precise meaning of a word, phrase, concept or physical quantity.
Demonstrate	Make clear by reasoning or evidence, illustrating with examples or practical application.
Derive	Manipulate a mathematical relationship to give a new equation or relationship.

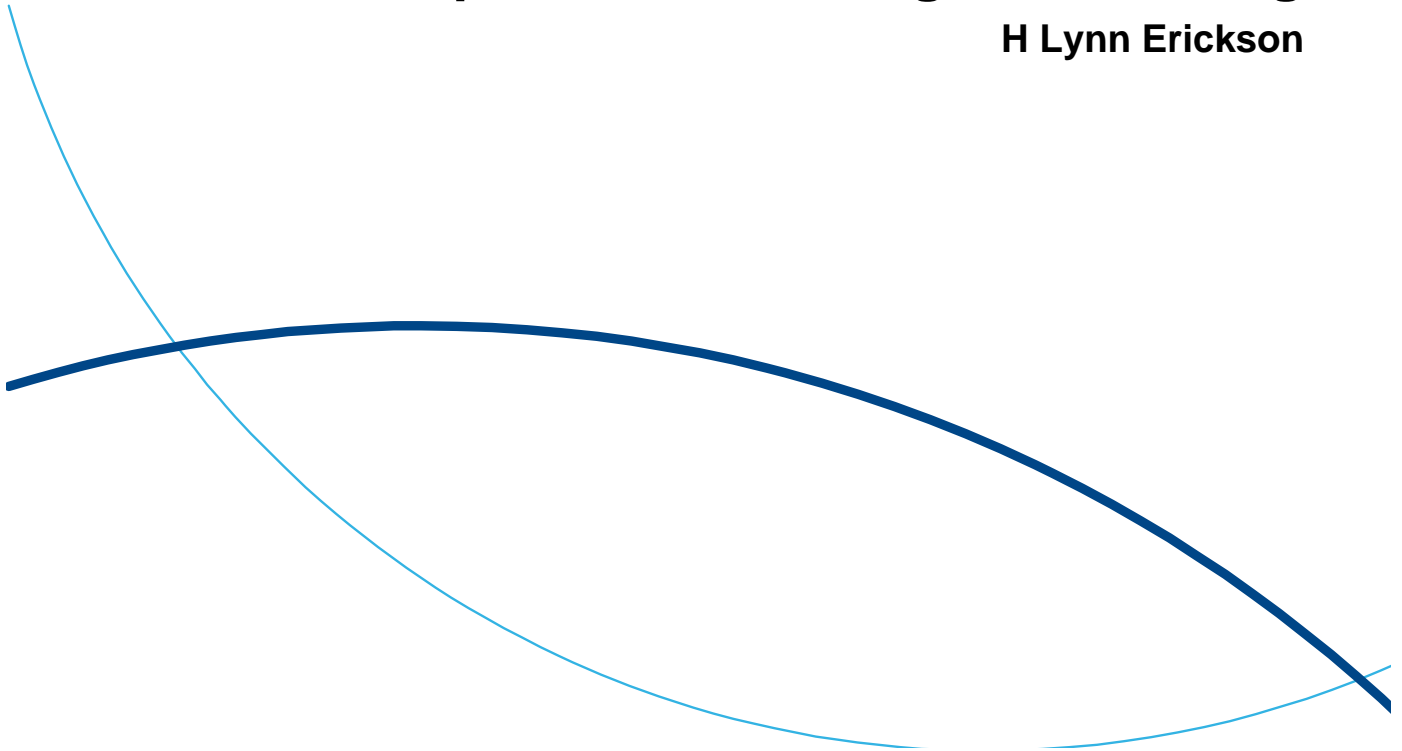
Command term	Definition
Describe	Give a detailed account or picture of a situation, event, pattern or process.
Design	Produce a plan, simulation or model.
Determine	Obtain the only possible answer.
Develop*	To improve incrementally, elaborate or expand in detail. Evolve to a more advanced or effective state.
Differentiate	Obtain the derivative of a function.
Discuss	Offer a considered and balanced review that includes a range of arguments, factors or hypotheses. Opinions or conclusions should be presented clearly and supported by appropriate evidence.
Distinguish	Make clear the differences between two or more concepts or items.
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.
Draw	Represent by means of a labelled, accurate diagram or graph, using a pencil. A ruler (straight edge) should be used for straight lines. Diagrams should be drawn to scale. Graphs should have points correctly plotted (if appropriate) and joined in a straight line or smooth curve.
Estimate	Obtain an approximate value for an unknown quantity.
Evaluate	Make an appraisal by weighing up the strengths and limitations. (See also "Critique".)
Examine	Consider an argument or concept in a way that uncovers the assumptions and interrelationships of the issue.
Explain	Give a detailed account including reasons or causes. (See also "Justify".)
Explore	Undertake a systematic process of discovery.
Find	Obtain an answer showing relevant stages in the working.
Formulate	Express precisely and systematically the relevant concept(s) or argument(s).
Hence	Use the preceding work to obtain the required result.
Otherwise	It is suggested that the preceding work is used, but other methods could also receive credit.
Identify	Provide an answer from a number of possibilities. Recognize and state briefly a distinguishing fact or feature.
Integrate	Obtain the integral of a function.
Interpret	Use knowledge and understanding to recognize trends and draw conclusions from given information.
Investigate	Observe, study, or make a detailed and systematic examination, in order to establish facts and reach new conclusions.

Command term	Definition
Justify	Give valid reasons or evidence to support an answer or conclusion. (See also "Explain".)
Label	Add a title, labels or brief explanation(s) to a diagram or graph.
List	Give a sequence of brief answers with no explanation.
Measure	Obtain a value for a quantity.
Organize*	Put ideas and information into a proper or systematic order.
Outline	Give a brief account or summary.
Plot	Mark the position of points on a diagram.
Predict	Give an expected result of an upcoming action or event.
Present	Offer for display, observation, examination or consideration.
Prioritize*	Give relative importance to, or put in an order of preference.
Prove	Use a sequence of logical steps to obtain the required result in a formal way.
Select*	Choose from a list or group.
Show	Give the steps in a calculation or derivation.
Show that	Obtain the required result (possibly using information given) without the formality of proof. "Show that" questions do not generally require the use of a calculator.
Sketch	Represent by means of a diagram or graph (labelled as appropriate). The sketch should give a general idea of the required shape or relationship, and should include relevant features.
Solve	Obtain the answer(s) using algebraic and/or numerical and/or graphical methods.
State	Give a specific name, value or other brief answer without explanation or calculation.
Suggest	Propose a solution, hypothesis or other possible answer.
Summarize*	Abstract a general theme or major point(s).
Synthesize*	Combine different ideas in order to create new understanding.
To what extent	Consider the merits or otherwise of an argument or concept. Opinions and conclusions should be presented clearly and supported with appropriate evidence and sound argument.
Trace	Follow and record the action of an algorithm.
Use	Apply knowledge or rules to put theory into practice. (See also "Apply".)
Verify	Provide evidence that validates the result.
Write down	Obtain the answer(s), usually by extracting information. Little or no calculation is required. Working does not need to be shown.



Concept-based teaching and learning

H Lynn Erickson



Introduction to IB position papers

This paper is part of a series of papers, written by IB practitioners and endorsed by the IB. Each paper addresses a topic or issue related to the IB's philosophy or its educational practices.

Other papers in the series

Allan, M. May 2011. *Thought, word and deed: The roles of cognition, language and culture in teaching and learning in IB World Schools.*

Davy, I. July 2011. *Learners without borders: A curriculum for global citizenship.*

Hare, J. July 2010. *Holistic education: An interpretation for teachers in the IB programmes.*

Marshman, R. July 2010. *Concurrency of learning in the IB Diploma Programme and Middle Years Programme.*

Walker, G. October 2010. *East is East and West is West.*

Abstract

This paper examines the characteristics of concept-based curriculum and instruction models and identifies the International Baccalaureate (IB) programmes as a three-dimensional, concept-based model. A discussion of the benefits of concept-based instruction supports the majority of attributes in the IB learner profile. Concept-based instruction requires an understanding of synergistic thinking, transfer of knowledge and social construction of knowledge. This paper addresses these areas and discusses them in the context of the required IB pedagogy. It concludes with a review of the challenges in implementing a concept-based model and a summary of the rewards.

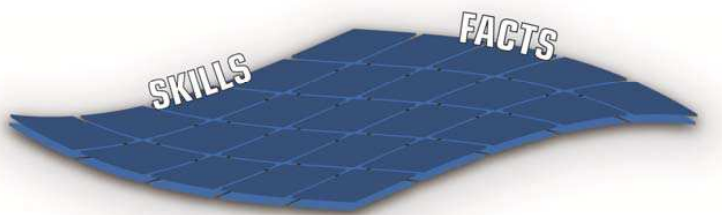
Introduction

The International Baccalaureate programmes offer a design for curriculum and instruction that is more challenging than traditional models, but which can produce deeper intellectual and emotional engagement in learning. The concept-based design is fully supported by cognitive and learning research. When information today is a click away on a computer keyboard, the use of classroom time must shift focus from covering and memorizing information to thinking with and applying knowledge at both the factual and conceptual levels. Thinking deeply with factual knowledge and concepts to communicate ideas and solve problems, transferring knowledge across distinct global contexts and situations, and seeing patterns and connections between concepts, ideas and situations are at the heart of concept-based teaching and learning. Less factual coverage can open the door to deeper thinking and understanding.

What is concept-based curriculum and instruction?

Concept-based curriculum and instruction is a three-dimensional design model that frames factual content and skills with disciplinary concepts, generalizations and principles. Concept-based curriculum is contrasted with the traditional two-dimensional model of topic-based curriculum which focuses on factual content and skills with **assumed** rather than deliberate attention to the development of conceptual understanding and the transfer of knowledge (see Figure 1).

2D CURRICULUM/INSTRUCTION TOPIC/SKILL-BASED MODEL



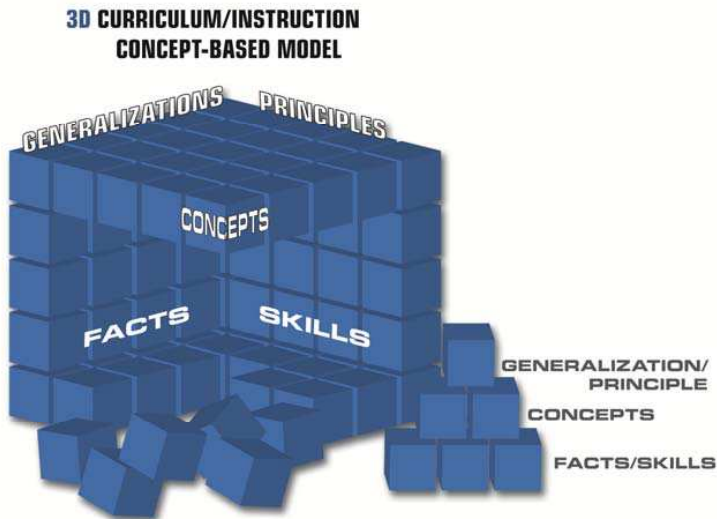


Figure 1. Two-dimensional and three-dimensional curriculum and instruction (taken from Erickson 2008).

Two-dimensional curriculum models focus on facts and skills with the goals of content coverage, analysis and the memorization of information. Three-dimensional models focus on concepts, principles and generalizations, using related facts and skills as **tools** to gain deeper understanding of disciplinary content, transdisciplinary themes and interdisciplinary issues, and to facilitate conceptual transfer through time, across cultures and across situations. Three-dimensional models value a solid base of **critical** factual knowledge across the disciplines, but they raise the bar for curriculum and instruction by shifting the design focus to the conceptual level of understanding. This focus necessarily requires a supporting role for factual knowledge.

A corollary goal of concept-based instruction that is seldom stated overtly is development of the intellect. In a concept-based instruction model teachers use the facts in concert with concepts and generalizations to effect higher order, synergistic thinking. Facts provide the foundation and support for deeper, conceptual thinking and understanding. Three-dimensional concept-based curriculum models value student inquiry and constructivist learning to support personal meaning-making.

The research and agreement on the importance of conceptual understanding is undeniable. From the National Council of Teachers of Mathematics (NCTM) (2009) we hear the call:

Any national mathematics curriculum must emphasize depth over breadth and must focus on the essential ideas and processes of mathematics (p 1).

...research on the learning of complex subjects such as mathematics has solidly established the important role of *conceptual understanding* in the knowledge and activity of persons who are proficient (p 2).

One of the strongest research summaries supporting the importance of conceptual understanding can be found in *How People Learn: Brain, Mind, Experience and School* (Bransford et al 2000), published by the National Academy of Sciences and the National Research Council.

Experts' knowledge is connected and organized around important *concepts* (eg, Newton's second law of motion) (p 9).

To develop competence in an area of inquiry, students must: a) have a deep foundation of factual knowledge, b) understand facts and ideas in the *context of a conceptual framework*, and c) organize knowledge in ways that facilitate retrieval and application (p 16).

... organizing information into a *conceptual framework* allows for greater *transfer*; that is, it allows the student to apply what was learned in new situations and to learn related information more quickly (p 17).

Anderson and Krathwohl's book (2001) updated Benjamin Bloom's *Taxonomy of Educational Objectives* (1956), and further supports the need to teach for deeper conceptual understanding.

By separating factual knowledge from conceptual knowledge, we highlight the need for educators to teach for *deep understanding of conceptual knowledge*, not just for remembering isolated and small bits of factual knowledge (p 42).

Students *understand* when they build connections between the "new" knowledge to be gained and their prior knowledge. More specifically, the incoming knowledge is integrated with existing schemas and cognitive frameworks. Since concepts are the building blocks for these schemas and frameworks, *conceptual knowledge* provides a basis for understanding (p 70).

Beyond the research, the importance of conceptual structures for disciplinary content just makes logical sense.

In what ways are IB programmes concept-based?

The Primary Years Programme (PYP), Middle Years Programme (MYP) and Diploma Programme (DP) are three-dimensional and concept-based because, by deliberate design, they require students to process factual knowledge through the conceptual level of thinking.

The DP values deeper critical thinking and conceptual understanding. The required theory of knowledge course examines different ways of knowing and challenges students to think beyond the facts as they analyse complex questions and issues in interdisciplinary inquiries. The extended essay and a variety of internal assessment tasks also engage the critical thinking of students as they independently plan, research, write and defend a significant question drawn from one of the subject areas (IB 2009b).

DP teachers ensure that students know the attributes and meaning of the subject area concepts. At times, however, teachers express a concern over the tension between a heavy curriculum load and the time to teach for deeper conceptual understanding and the transfer of knowledge. This tension can sometimes result in implicit rather than explicit demonstrations of understanding. As the DP continues to develop, this tension might ease if key concepts and disciplinary related concepts were used to explicitly state the important conceptual relationships to guide instruction. This would focus the teaching and learning on the most significant conceptual understandings, and strengthen the bridge between the PYP, MYP and DP. I am sensitive to the curricular demands for university recognition but I also feel strongly that less is more when the student synergistically processes factual information through the conceptual level of thinking. Building the conceptual structures for deep understanding and the transfer of knowledge supports autonomous learners who maximize their learning by seeing patterns and connections between new knowledge and prior learning. New courses based on conceptual frameworks such as global politics will continue to emerge that will support teachers in helping students learn to do meta-analyses of complex systems, but traditional discipline-based courses also need a concept-based curriculum and instruction design for deep understanding.

The DP, like the PYP and MYP, supports international-mindedness and understanding of other cultures. Identifying key and related concepts and framing critical subject area content with a central idea and additional "supporting ideas" (which will be introduced later in this paper) can strengthen the transfer of knowledge across global contexts as new examples of previously learned concepts arise. Concept-based curriculums can support teachers in moving deliberately to idea-centred instruction. I know that DP teachers value deeper conceptual thinking and understanding. An idea-centred curriculum of important conceptual understandings supported by relevant content would help teachers meet these goals.

The PYP is **transdisciplinary** in nature. The identification of transdisciplinary themes (for example, who we are, how the world works) frame the concepts, skills, attitudes and actions linked to what is real and relevant in the world through the design of programmes of inquiry. The transdisciplinary themes ensure that curriculum and instruction move beyond factual coverage in discrete subject areas to an integrative synthesis of knowledge and conceptual understandings to better understand our world and our place within the world (IB 2010). The MYP is developing a set of “global contexts” to use in their unit designs that will facilitate transcendent thinking, similar to that driven by the transdisciplinary themes of the PYP (IB 2012).

In the PYP and MYP the key concepts draw thinking beyond the facts. This is significant for three main reasons.

1. The use of key concepts prevents an overreliance on memorization of facts as the end goal. In a concept-based model students must process the facts through their personal intellect—the conceptual mind. The key concept provides focus to the topic under study, acting as a conceptual draw for personal engagement and mental processing. The focus shifts from memorization—or a lower form of mental engagement—to deeper, personal inquiry as students consider connections between the facts and the key concept(s). Key concepts are macro-concepts that transcend disciplines such as change, interdependence, system and relationships. The PYP has identified eight macro-concepts as key concepts to use for the programme. The choice of just one or two key concepts for a unit planner can prevent the conceptual focus from becoming too diffuse. The MYP is also working to identify a set of key concepts. Key concepts integrate thinking at the conceptual level.
2. Key concepts facilitate the transfer of knowledge through time, across cultures and across situations. The IB position paper *Thought, word and deed: The role of cognition, language and culture in teaching and learning in IB World Schools* (Allan 2011) cites research undertaken in schools in the United States, Australia and Germany that found when students are exposed to abstract concepts apart from context, learning is difficult.
3. Intercultural understanding depends on the ability to see the commonalities and differences in terms of concepts and their expressions across global contexts, whether they be social, political, economic or geographical/environmental. When students develop understanding of key concepts and central ideas (statements of conceptual relationship) they become aware that these concepts and ideas can be applied across cultures.

I believe it is critical that all IB programmes attend to both the key concepts and the more discipline-specific related concepts to ensure that students develop breadth **and depth** of conceptual understanding. The transferability of key concepts such as system, change and order help students recognize the many permutations of each concept from body systems, to economic systems, to environmental systems. The related concepts, however, ensure that instruction builds depth of understanding by attending to, and adding to, the language of each subject area—the discipline-specific concepts and their important relationships from year to year. In the PYP, these related concepts can be taught in the context of the transdisciplinary units of instruction developed for the programmes of inquiry. Identifying the related concepts in these units ensures that disciplinary depth is included in the inquiry. When I use the term “related concepts” in my work with concept-based curriculum design, I am referring to the concepts related to specific disciplines within the unit, rather than specific concepts related to various key concepts. The reason for this is I want to identify the more specific concepts to build disciplinary depth.

At this time the PYP and the MYP ask teachers to use a key concept and a more discipline-specific related concept to state a central idea and concept statement respectively. To reinforce idea-centred teaching and conceptual thinking I recommend consideration of additional conceptual understandings crafted with the more discipline-specific related concepts to be added to each unit. I will call these understandings “supporting ideas” for the purposes of this discussion. In the MYP and PYP if a year-long course of instruction was framed under five or six units of instruction, I would think five to eight supporting ideas per unit—in addition to the central idea/concept statement—would be reasonable to guide the formative work.

Another reason I suggest that the PYP and MYP use the more specific related concepts to write additional supporting ideas for their unit planners is to continually build disciplinary schemata in the brain, so students are prepared for the conceptual rigour of the DP, as well as for lifelong learning and

work. It is through the conceptual structures of knowledge that the PYP, MYP and DP can be further aligned and articulated on the IB programme continuum.

Aligning the terminology through the different levels of the IB programmes and articulating central and supporting ideas using key and related concepts at all three levels of the IB would provide the structure for a continuous and coherent concept-based scheme of instruction. A concept-based curriculum is idea-centred. Central and supporting ideas facilitate a pedagogy requiring synergistic thinking which means guiding students, through inquiry, to realize the deeper conceptual understandings supported by factual content. In the PYP, a suggestion could be to write more specific disciplinary supporting ideas to serve as the lines of inquiry. Developing critical central and supporting ideas for the different subject areas (referred to as “subject groups” in the MYP) across all levels of the IB continuum would provide clear understanding of targets for the teachers, and would facilitate a truly idea-centred pedagogy. This would also allow the breadth of curriculum content to be compacted and focused.

How is a concept-based curriculum beneficial to student learning?

Concept-based curriculum and instruction is essential to the IB educational paradigm. The critical elements that require a concept-based model are intercultural understanding and international-mindedness, the ability to transfer knowledge and a rigorous intellectual model that is emotionally engaging and motivating.

There are many benefits to a concept-based model.

- Thinking—It requires thinking students who draw on critical, creative, reflective and conceptual thinking abilities.
 - Facilitates “synergistic thinking”—the cognitive interplay between the factual and conceptual levels of thinking.
 - Requires deeper intellectual processing as students relate the facts to key concepts and principles.
 - Develops conceptual structures in the brain (brain schemata) to relate new knowledge to prior knowledge, and to illuminate the patterns and connections of knowledge.
 - Facilitates the transfer of knowledge at the conceptual level.
 - Provides opportunities for personal meaning-making through processes of thinking, creating and reflecting.
- Intercultural understanding—It develops intercultural understanding and international-mindedness through conceptual transfer.
 - Facilitates the transfer of learning across global contexts as students engage with concepts and conceptual understandings as reflected across unique and varied cultures.
 - Encourages inquiry into global issues of concern that draw out the multiple perspectives and situations of different cultures and nations.
- Motivation for learning—It recognizes that intellectual and emotional engagement are essential to the motivation for learning.
 - Increases motivation for learning by inviting students to think about the facts through a relevant and personally engaging key concept. The unit topic and the key concept have an iterative relationship—each reinforces the other, for example, considering the facts about “Global conflicts in the 21st century” through the conceptual lens of perspectives, or considering facts about “Our land and people” through the lens of identity.

- Values and respects the thinking of the individual by “drawing understandings from” rather than “telling understandings to”.
- Encourages constructivist learning experiences that are relevant and important.
- Values collaborative thinking, discussions, and problem-solving with the belief that the social construction of meaning not only leads to a quality product, but is motivating to participants as well.
- Fluency with language—It increases fluency with the languages of cultures and the disciplines.
 - Illuminates the conceptual structures of “meta-language” to facilitate multilingual learning and communication across cultures.
 - Builds increasing fluency with disciplinary language as students explain and support their conceptual understanding with relevant factual knowledge.
 - Reinforces a common conceptual vocabulary and set of critical conceptual understandings in the different disciplines which can help alleviate language barriers in global labour contexts when students enter the workforce.

These benefits are inherently supportive of the majority of the characteristics outlined in the IB learner profile (IB 2009a, p 5):

- inquirers
- knowledgeable
- thinkers
- communicators
- open-minded
- reflective.

What are the required pedagogical shifts?

Synergistic thinking

I believe that **synergistic thinking** (Erickson 2007; 2009b) is essential for intellectual development. Synergistic thinking is a cognitive interplay between the factual and conceptual levels of mental processing. Synergy can be defined as two interacting agents providing a greater effect than either agent acting alone. Thinking without this factual/conceptual interaction can be shallow. Without a deliberate curriculum design that mandates this intellectual interplay, we may confuse memorized knowledge with deeper understanding. Just knowing the definitions of concepts is not sufficient. Just knowing facts is not sufficient.

Transfer of knowledge and skills

Facts do not transfer. They are locked in time, place or situation. Knowledge transfers at the conceptual level as concepts, generalizations and principles are applied across global contexts and situations. The ability to use the conceptual level of thinking to relate new knowledge to prior knowledge, to see patterns and connections between different examples of the same concept or conceptual understanding, and to pattern and sort the expanding information base is a critical skill for the 21st century. The transfer of processes and skills across multiple disciplines and contexts to deepen understanding and enhance performance is another mandatory facet of IB programmes. The approaches to learning (ATL) in the MYP continue to be developed along with the transdisciplinary skills in the PYP. Work is underway to organize ATL skills across all levels of the IB related to five skill clusters: social, research, thinking, communication and self-management.

Social construction of meaning

Quality thinking is hard work. Concept-based models encourage collaborative group work to enhance thinking and problem-solving. Different minds working together scaffold each other and generate new ideas and solutions. The social construction of meaning and collaborative groups work is a significant aspect of all IB programmes. School days filled with teacher-dominated lectures to passive students, locked into parallel rows of desks, are hopefully a relic of past pedagogies.

Effective concept-based teachers in IB programmes understand the principles of synergistic thinking, the transfer of knowledge and socially constructed meaning-making. They have at some point made the following pedagogical shifts in their instruction if they began their teaching career in a traditional two-dimensional model. (Please also see the appendix for an example.)

From two-dimensional instruction*	To three-dimensional instruction
The goal is increased factual knowledge and skill development.	The goal is increased conceptual understanding supported by factual knowledge and skills, and the transfer of understanding across global contexts.
Teacher relies heavily on lecture to disseminate factual knowledge.	Teacher facilitates student inquiry into important interdisciplinary and disciplinary topics and issues using one or two key concepts as the conceptual draw.
Instruction and learning experiences focus on factual examples and definitions of concepts with assumed conceptual understanding.	Instruction and learning experiences utilize concepts along with factual content to ensure synergistic thinking. Teacher deliberately uses concepts to help students transcend the facts.
Teacher posts objectives for each lesson as required.	Teacher posts questions of different kinds (factual, conceptual, debatable) to engage interest and to facilitate synergistic thinking.
Students face the teacher in straight rows to ensure order and attention to the teacher's instruction.	Students often work in groups to facilitate shared social inquiry, collaboration, synergistic thinking and problem-solving. Students may work independently, in pairs or groups, or across global contexts using the internet or other communication tools.
Teacher verbally summarizes the learning related to the objectives at the close of the lesson.	Teacher uses inductive teaching to draw the statement of conceptual understanding from students near the end of a lesson and posts the central or suggested supporting ideas for later connections to future topics in the curriculum. Students support their understanding with accurate facts as evidence of quality synergistic thinking.
Assessments measure factual knowledge and skills.	Assessments of conceptual understanding tie back to a central (or supporting idea) by incorporating specific language from the idea in the task expectations.
Teacher focuses on covering the required curriculum.	Teacher focuses on student thinking and understanding. He/she is cognizant of each student's ability to think synergistically.

*The two dimensional model is exaggerated in this paper to provide a clear contrast with the three-dimensional model.

Challenges and summary

There are challenges to the development and implementation of a concept-based, three-dimensional curriculum. But challenges indicate opportunities. The IB has the opportunity to meet the challenges to

refine the IB programmes so they are truly the most effective and engaging in the world. The greatest challenges centre around curriculum development and programme articulation, teacher training and assessment.

Fundamental to success in meeting each of these challenges is a solid understanding of concept-based, three-dimensional curriculum and instruction.

1. Curriculum development. Quality teaching is supported by quality curriculums. The curriculum must be concept-based to meet the goals of transfer of knowledge, deep conceptual understanding, synergistic thinking, intercultural understanding and personal intellectual engagement. The IB continuum can be articulated and coordinated through the development of common terminology and a common curricular framework of key concepts, related concepts, and central and discipline-based supporting conceptual understandings. Unit planners can help ensure that a concept-based teaching plan will be developed.
2. Teacher training. This challenge is critical to the success of a concept-based model. If teachers do not understand the concept-based model and required shifts in pedagogy they will fall back on traditional teaching methods and fail to effect transfer of knowledge and deep understanding. As new schools and teachers are continually joining the IB family, creative ways of delivering the teacher training need to be developed. Regional training centres around the world that certify IB trainers after a rigorous training programme of one or two weeks with materials that teach the concept-based model along with the other facets of the IB programmes could be part of the solution. The critical point is that anyone training teachers on the concept-based model must understand the model completely and be able to convey that understanding to others effectively. (Administrators also need to be well trained on the meaning of a concept-based curriculum, what to look for in instruction and how to support teachers in the implementation of the IB model.)
3. Assessment—The challenge here is to assess to the conceptual level of understanding, rather than just to the factual level. The design of the classroom assessments must be part of the teacher training programme. The IB external assessments also need to assess to the conceptual level of understanding, while allowing schools to use local content to support the understandings.

Many nations lament the academic progress of their students year after year. Government officials institute “solutions” and throw money at the problem but the “solutions” usually centre around increased objectives to ensure topics are covered fully and more testing to make certain the curriculum is taught as defined. However, the focus is on the content rather than on the development of the whole child—social, emotional, intellectual and physical—a terrible mistake.

The IB is on the correct path to prepare citizens of the future for living, learning and working in global environments, and for addressing the complex problems and issues that will undoubtedly arise. The IB community is a family of passionate educators who will continue to develop common understandings in curriculum and pedagogy to keep the ship on course. This journey could not be more important.

About the author

H Lynn Erickson is the author of three bestselling books: *Stirring the Head, Heart and Soul: Redefining Curriculum and Instruction*, 3rd edition January 2008; *Concept-based Curriculum and Instruction: Teaching Beyond the Facts*, 2002; and *Concept-based Curriculum and Instruction for the Thinking Classroom*, 2007, all published by Corwin Press. Erickson is a recognized presenter at national conferences in the areas of concept-based curriculum design, teaching for deep understanding and standards alignment.

Erickson was born and raised in Fairbanks, Alaska. She graduated from the University of Alaska in 1968 and taught at North Pole, Alaska before moving south. She taught various grade levels in California and moved to Missoula, Montana in 1976, earning master's and doctorate degrees in curriculum and instruction and school administration. She has worked as a teacher, principal, curriculum director, adjunct professor and educational consultant over a 42-year career.

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Appendix

Nevine Safire teaches the MYP. She has developed a concept-based unit around the central question "When does population growth become 'overpopulation'?" To focus this unit she has chosen the key concepts of interactions and change from the MYP subject group guides. She is facilitating inquiry into the central idea "human/environmental interactions can become unbalanced, leading to changes with unintended consequences".

Ms Safire has identified related concepts from science and the humanities to use in developing some supporting ideas to facilitate greater conceptual depth and understanding throughout the inquiry. Some of these concepts she found in the MYP subject group guides; others she extrapolated from the content she will be teaching:

Migration	Environments	Overpopulation
Location	Scarcity	Climate change

Population	Equilibrium	Conflict
Population density	Endangered	Adaptation
Natural resources	Trade	Sustainability

Ms Safire developed five or six supporting ideas to guide the formative unit work. One of her supporting ideas for this unit was “overpopulation can lead to conflict over scarce natural resources”. Within the lesson Ms Safire asks students to analyse both local and global contexts for population density. We will identify aspects of concept-based pedagogy as we follow some of Ms Safire’s thoughts during a concept-based lesson related to this supporting idea.

Classroom actions	Ms Safire’s thoughts
Ms Safire: We have been learning about population growth in our unit. In this lesson we are going to think about the effects of overpopulation . What does the term “overpopulation” mean to you?	I want to check students’ prior conceptions of the term and draw out a clear definition that we can build on.
Students view the video “World Population” by Population Connection.	This world map, adding the points of light representing increasing population growth over time, is an unforgettable visual of the growing problem.
Students work in table groups using a graphic organizer to predict the possible effects of rapidly increasing population density on the following: land, animal populations, plants, natural resources.	I wonder if students can foresee the potential problems that may be caused by rapidly increasing populations.
Analyse the graphic organizer and discuss the question “At what point might population growth be considered ‘overpopulation’?”	This provocative question requires students to articulate the destructive effects of an imbalance between the human and natural world.
View and discuss the video “Overpopulation and Its Effects on Our World”. http://www.youtube.com/watch?v=mWWho_ega0RU	This video supports, and further extends students’ understanding of the effects of overpopulation.
<p>Teacher questions:</p> <p>Factual: Does our state (country, region) have areas of dense population? What issues in our region would suggest the danger of overpopulation? What areas of the world have very dense population centres?</p> <p>(Note: Ms Safire engages students with a research activity on overpopulation in different parts of the world and uses guiding questions to develop understanding.)</p> <p>Conceptual: Why do nations develop concentrated “population centres”? What would indicate that a population centre is “overpopulated”? How do increasing human/environmental interactions change the environment? How might these interactions lead to scarce natural resources? How do communities with scarce natural resources meet their survival needs? How can scarce natural resources lead to conflict between groups of people or nations?</p> <p>Provocative/Debatable:</p> <ul style="list-style-type: none"> • How can governments ensure that their citizens have the 	I will ask students to bring their questions to the inquiry, but I also developed some factual, conceptual and provocative, debate questions for the lesson. I want to move students’ thinking beyond the local examples to the global perspective so that students can see the parallelism between local and global issues of concern. I want students to know which areas of the world have the greatest and least availability of natural resources; and to understand that scarcity of natural resources can lead to conflict.

<p>necessary natural resources for survival?</p> <ul style="list-style-type: none"> Should nations with plentiful natural resources be required to share with nations who have scarce natural resources? <p>Be prepared to defend your position.</p>	
<p>We have been inquiring into the idea of overpopulation. The following concepts have entered into our discussion. In your table groups see how many concept statements you can develop by showing relationships between the concepts below. Remember that these concept statements must transfer through time and across situations.</p> <ul style="list-style-type: none"> Environment Interactions Change Overpopulation Natural resources Conflict Cooperation Scarcity <p>Be ready to cite specific factual examples to support your understandings.</p>	<p>I know that students will necessarily use synergistic thinking in this learning experience as they use the factual examples to support the construction of their conceptual understandings. I will be interested in seeing the relationships they find.</p>
<p>Assessment task:</p> <p>You are the leader of a task force that has been commissioned by the city council to propose solutions to the problem of scarce water supplies caused by severe droughts in your area. A neighbouring area, which has also been affected by the drought, has blocked the downstream flow of water from a major source to ensure that all of their agricultural and industrial uses of water can be met. This blockage of water to your area has led to a heated conflict. You are to make a presentation to the city council that describes the water problem, and suggests creative and viable solutions—including a way to work with the neighbouring area to collaboratively develop a win-win solution. You can choose your mode of presentation.</p>	<p>This authentic performance task will help students learn to collaboratively problem solve using a local issue that has global implications. The task connects back to the supporting idea that scarce natural resources can lead to conflict and supports the IB aim of taking principled action to solve a community problem.</p>

As we read Ms Safire's thoughts during the lesson we can see her attention to concept-based pedagogy through the following:

- checking for prior understanding of concepts
- encouraging predictions
- using different kinds of questions (factual, conceptual, debatable) to move thinking beyond the facts
- engaging synergistic thinking
- assessing for conceptual understanding as well as facts and skills.

Teacher(s)		Subject group and discipline	
Unit title		MYP year	Unit duration (hrs)

Inquiry: Establishing the purpose of the unit

Key concept	Related concept(s)	Global context
Statement of inquiry		
Inquiry questions		
Factual— Conceptual— Debatable—		

Objectives	Summative assessment	
	Outline of summative assessment task(s) including assessment criteria:	Relationship between summative assessment task(s) and statement of inquiry:
Approaches to learning (ATL)		

Action: Teaching and learning through inquiry

Content	Learning process
	Learning experiences and teaching strategies
	Formative assessment
	Differentiation
Resources	

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

Prior to teaching the unit	During teaching	After teaching the unit

MYP unit planner

Teacher(s)		Subject group and discipline		
Unit title	Topic, local or national requirement, or engaging designation	MYP Year	1-5	Unit duration (hrs)

INQUIRY: Establishing the purpose of the inquiry

Key concept	Related concept(s)	Global context
<p>Key concepts promote the development of a broad curriculum. They represent big ideas that are both relevant within and across disciplines and subjects. Inquiry into key concepts can facilitate connections between and among</p> <ul style="list-style-type: none"> • courses within the subject group • other subject groups (interdisciplinary learning). <p>These key concepts provide a framework for the subject group, informing units of work and helping to organize teaching and learning.</p>	<p>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.</p>	<p>Global contexts direct learning toward independent and shared inquiry into our common humanity and shared guardianship of the planet. Using the world as the broadest context for learning, MYP subject groups can develop meaningful explorations of</p> <ul style="list-style-type: none"> • identities and relationships • orientation in space and time • personal and cultural expression • scientific and technical innovation • globalization and sustainability • fairness and development
Statement of inquiry		
<p>Statements of inquiry set conceptual understanding in a global context in order to frame classroom inquiry and direct purposeful learning.</p> <p>Statements of inquiry summarize 'What we will be learning, and why' in language that is meaningful to students.</p>		
Inquiry questions		
<p>Factual: concrete questions that have right and wrong answers (who, why, what, when, where); often focusing on recall</p>		

<p>Conceptual: more abstract questions that explore broader meanings, deeper understanding and transferrable knowledge; often involving analysis and synthesis</p> <p>Debatable: questions that generate disagreement, engage multiple perspectives, and promote critical and creative thinking; often involving the creation and exploration of competing values, theories and rationales.</p>			
Objectives		Summative assessment	
Include the unit's objectives, listing specific strands to be addressed		Outline of summative assessment task(s) including assessment criteria: Describe the task(s) that students will undertake in order to demonstrate their achievement of subject group objectives (often performances of understanding)	Relationship between the summative assessment task(s) and the statement of inquiry: Describe how the statement of inquiry and summative assessment are connected
Approaches to learning (ATL)			
Identify ATL skill(s) that students will develop, through their engagement with the unit's learning experiences (including formative assessments), that they need in order to meet the unit's objectives: general skills AND subject specific skills. An effective way to identify and align ATL skills for MYP units includes a simple chart:			
IB ATL CATEGORY	MYP ATL CLUSTER	SPECIFIC ATL SKILL	LEARNING EXPERIENCES
Approaches to learning are most powerful when teachers plan and students engage with them in connection with significant and relevant content knowledge in order to develop transferable understanding. Teachers should teach skills explicitly, and students should have structure opportunities to practice,			
ATL skills focus on the process of learning, helping students to become confident, independent, self-managed learners for life.			

ACTION: Teaching and learning through inquiry

Content	Learning process
<p>Include contents of the unit:</p> <ul style="list-style-type: none"> • facts • topics • terms, symbols & notation <p>Local or national content requirements and curriculum standards/objectives</p>	<p>Learning experiences and teaching strategies</p> <p>Learning experiences and teaching strategies should be aligned with the unit's purpose, MYP objectives and summative assessment. They should focus on student-centered, inquiry-based learning engagements, and contain sufficient detail about what students will do, and in what order. This section can provide a flexible road map for developing detailed lesson plans which support personal teaching styles or meet local requirements.</p>
	<p>Formative assessment</p> <p>Here teachers plan and record assessment FOR learning- class work or homework that provides practice and feedback for developing ATL skills (general and subject specific) as well as disciplinary (and interdisciplinary) knowledge and understanding. Formative assessment can support/ provide scaffolding for summative assessments, including more complex performances of understanding.</p>
	<p>Differentiation</p> <p>What options do we provide to meet the individual learning needs of all students? How can we help students to access the curriculum by developing a range of content, processes, products and learning environments?</p>
<p>Resources</p>	
<p>Include detailed information: textbooks and other reading; reference material; internet; student experience; community (cultural and linguistic); people and organizations; learning environments</p>	

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REFLECTION: Considering the planning, process and impact of the inquiry

Prior to teaching the unit	During teaching	After teaching the unit
<p>Why do we think that the unit or the selection of topics will be interesting?</p> <p>What do students already know, and what can they do?</p> <p>What have students encountered in this discipline before?</p> <p>What does my experience tell me about what to expect in this unit?</p> <p>What attributes of the learning profile does this unit offer students opportunities to develop?</p> <p>What potential interdisciplinary connections can we identify?</p> <p>What do we know about my students' preferences and patterns of interaction?</p> <p>Are there any possible opportunities for meaningful service learning?</p> <p>What in the unit might be inspiring for community or personal projects?</p> <p>Could we develop authentic opportunities for service learning?</p> <p>How can we use my students' multilingualism as a resource for learning?</p> <p>MYP Unit planner notes for TSM/ guidance May 2013</p>	<p>What difficulties did we encounter while completing the unit or the summative assessment task(s)?</p> <p>What resources are proving useful, and what other resources do we need?</p> <p>What student inquiries are emerging?</p> <p>What can we adjust or change?</p> <p>What skills need more practice?</p> <p>What is the level of student engagement?</p> <p>How can we scaffold learning for students who need more guidance?</p> <p>What is happening in the world right now with which we could connect teaching and learning in this unit?</p> <p>How well are the learning experiences aligned with the unit's objectives?</p> <p>What opportunities am I hearing to help students explore the interpretative nature of knowledge, including personal biases that might be retained, revised or rejected? (DP Theory of knowledge skills development)</p>	<p>What were the learning outcomes of this unit?</p> <p>How well did the summative assessment task serve to distinguish levels of achievement? Was the task sufficiently complex to allow students to reach the highest levels?</p> <p>What evidence of learning can we identify? What artefacts of learning should we document?</p> <p>Which teaching strategies were effective? Why?</p> <p>What was surprising?</p> <p>What student-initiated action did we notice?</p> <p>What will we do differently next time?</p> <p>How will we build on our experience to plan the next unit?</p> <p>How effectively did we differentiate learning in this unit?</p> <p>What can students carry forward from this unit to the unit? To the next year/ level of study?</p> <p>Which subject groups could we work with next time?</p> <p>What did we learn from standardizing the assessment?</p>

Language
and learning

Inclusive
education

Global
engagement

Multiple
programme schools

Learning stories from the IB continuum share examples of good practice from IB World Schools in order to promote inquiry, action and reflection by educators and school learning communities. School samples in this series represent a range of development and application of IB programme standards and practices.

A global learning story about responsible action

Background information

The International School Manila (ISM) is an independent international school in the Philippines whose structures and traditions reflect an educational heritage from the United States. ISM has offered the IB Diploma Programme since 1975. The school's mission is to "build a vibrant learning community" where people live "positively, joyfully and ethically". Every age group participates in service learning—with a particular focus on "Education for all" as the key to creating a better world. The school's service learning goals are to:

- develop awareness of injustices in the ISM community, the Philippines and the world
- develop genuine compassion leading to lifelong involvement in community service
- develop responsible citizens (individuals whose actions add harmony to the world)
- develop disciplined thinkers (individuals who avoid thinking in black-and-white and instead seek to understand the complex nature of issues)
- develop the understandings that "the main cause of poverty is injustice" and "poor children have the same potential as advantaged children, they only lack opportunity"
- think globally but live more locally.



ISM put these principles into practice and demonstrated its strong commitment to collaborative planning by hosting a student conference in partnership with the Global Issues Network (GIN). GIN was launched in 2007 by teachers and students from six international schools in Europe. The programme was inspired by the IB community theme "Sharing our humanity" and by Jean-François Rischard, former World Bank Vice-President for Europe. His book *High Noon: Twenty Global Problems, Twenty Years to Solve Them* promotes cooperation to address critical challenges involving water management, climate change, environmental sustainability, global health and extreme poverty.

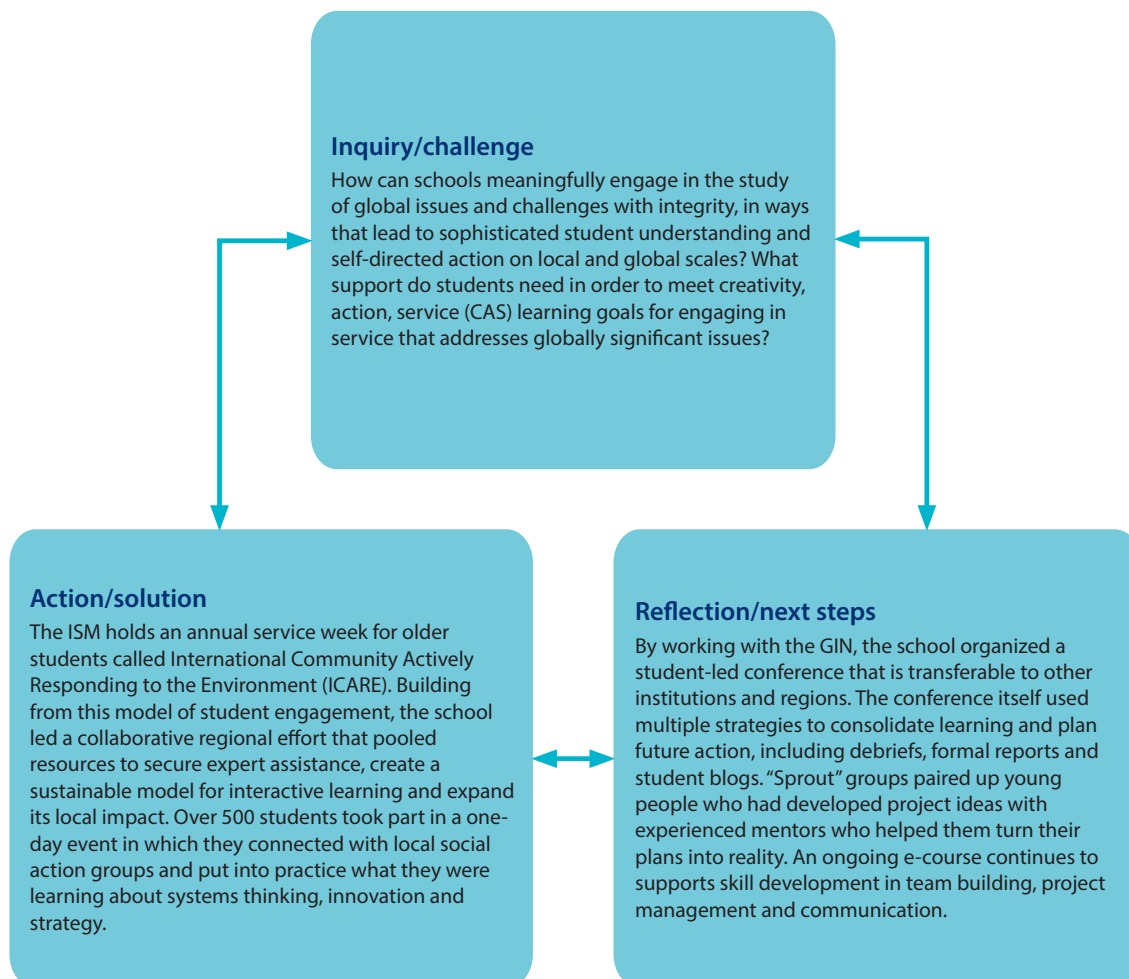


THE IB CONTINUUM

Cultural context

Using global contexts to understand local challenges, the school engages Filipino social entrepreneurs and artists to address pressing community concerns: safety for homeless children and preservation of mangrove forests in the Philippines (a focus of conservation leadership by Filipina scientist Jurgenne Primavera). For the GIN conference, students grounded their learning in a day of action in Manila, a developing Asian megacity. Along with the East Asia Regional Council of Schools (EARCOS), the ISM works alongside other international schools committed to collaboration, communication, intercultural understanding and access to broader educational opportunities. EARCOS promotes friendship among the many cultures of countries as diverse as China, Fiji, Hong Kong, India, Indonesia, Laos, Malaysia, Mongolia, Myanmar, Philippines, South Korea, Thailand and Vietnam.

Inquiry, action, reflection



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Standards and practices

ISM's inquiry, action and reflection on global challenges demonstrates growth toward the following IB *Programme standards and practices* (2010).

A: Philosophy

5. The school promotes responsible action within and beyond the school community.

B2: Resources and support

11. The school utilizes the resources and expertise of the community to enhance learning within the programme(s).

C2: Written curriculum

7. The written curriculum promotes students' awareness of individual, local, national and world issues.

C3: Teaching and learning

6. Teaching and learning addresses human commonality, diversity and multiple perspectives.



On their IB journey, schools reflect and report on their implementation of these standards for programme authorization and ongoing programme evaluation.

Highlights



Adapted from "Pyramid Lite: A Simplified Version of the Pyramid Workshop Process — PYRAMID 2012 Special Edition," © 2012 by AtKisson, Inc., used with permission.

In the GIN Manila 2012 conference on "Compassionate Action", ISM used AtKisson Group's "Pyramid for action" to create "sustainable action planning" workshops (SAPs) that empowered students to serve as group facilitators, providing a framework for sustained inquiry and responsible action. This strategy developed students' conceptual understanding, knowledge base, approaches to learning (skill development), dispositional awareness and emotional intelligence.



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Excerpt from student work

Before, during and after the conference, students used blogs to analyse issues, report progress and reflect on action. One group explored sustainable management of world fisheries and aquaculture. Here is an example from their introduction to this issue of global significance.

There's a silent genocide going on in the seas, beyond where our eyes can see, beyond the patrol of policemen, outside in countless waters. Do we think twice about the sushi we eat—have we ever asked where exactly it was from and what method was used to catch the fish? That tuna we so frequently find in our diet, and consume without questioning of its origin, could've been caught through dynamite fishing, or bottom trawling, and on the way could've destroyed vital ecosystems in water such as coral reefs (which breed young fish) and other vulnerable habitats. That piece of tuna could've been caught by huge international corporations, and local fishermen may have lost jobs and who knows what sort of domino effect that may have had—what skills would they have now to be proud of, and what income would they have to support their families? How do we change their default mindset of “a war between the fishes and humanity,” and how do we promote the sense of interconnectedness between our fisheries and ourselves? The issue of fisheries depletion is a massive one, and it stretches on and on to the most fundamental aspects of not only our environment, our society, our economy, but also our personal and emotional well being.

Building a case for change, the group used a “compass” approach (with the mnemonic N/E/S/W) to create a multidimensional analysis of issues, systems, leverage points, feedback loops and creative solutions. They organized their initial inquiry as follows.

Nature

1. Increased population of formerly endangered marine species, including fish.
2. Decrease the use of harmful fishing practices such as bottom trawling, dynamite, electro-fishing, etc.
3. Less pollution caused by human activities, which kill marine life including fish, such as oil spills, garbage, toxic runoff, etc.
4. More conservation of natural ecosystems and protecting fish, coral, and other important species.

Economy

1. Job security of those involved in the fishing industry.
2. Ensuring that the fishing industry does not suffer massive losses as fish supplies are depleted.
3. Increased market share of small scale fishing companies or individual fishermen, who face being crowded out by large corporations.
4. Increased dedication to sustainable fishing practices from involved corporations, such as supermarket giants and fishing companies.

Society

1. Increased awareness amongst consumers of the issue of fisheries depletion, so that they can make more sustainable dietary choices.
2. Increased efforts from governments to address the issue of fisheries depletion.
3. Increased societal pressure on involved businesses and corporations to make public information regarding the way they acquire their fish.



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Well being

1. Protection of communities and individual fishermen whose lifestyles and well-being are inextricably tied to the health of world fisheries.
2. Protection of consumers of fish from increasing levels of harmful toxins in the animal due to human pollution, such as increased levels of mercury.

This kind of analysis serves as the starting point from which students are continuing to develop and implement sustainable initiatives that address key challenges across many scales (local, regional, national, international and global).

Additional information

<http://www.pyramid2012.wordpress.com>

<http://www.gk1world.com>

<http://www.earcos.org>

<http://www.constructing-learning.com>

<http://www.ismanila.org>

<http://www.tigweb.org>

<http://www.global-issues-network.org>

<http://www.ginmanila2012.wordpress.com>

<http://sustainability.ism-online.org/>