

Introduction

THE INTERDISCIPLINARY MULTIMEDIA MODEL



Interdisciplinary Middle Years Multimedia Project

Manitoba Education, Citizenship and Youth established the Interdisciplinary Middle Years Multimedia (IMYM) Project in 1996 to develop and implement the IMYM model. The IMYM model demonstrates how the infusion of information and communication technologies (ICT) with promising instructional practices can add value to teaching, learning, and assessment. IMYM supports *Literacy with ICT Across the Curriculum*, a departmental initiative introduced in 2004, with learning resources such as

- interdisciplinary instructional units for each of the Middle Years grades (Grades 5, 6, 7, and 8)
- the Interdisciplinary Middle Years Multimedia Model website at www.edu.gov.mb.ca/k12/tech/imym/

The IMYM model also supports professional learning for educators through the IMYM listserv (see Subscribe to Receive Information Technology Updates on the IMYM website at www.edu.gov.mb.ca/k12/tech/imym/subscribe.html). This professional learning network is intended to support you, as educators and/or mentors, as you restructure your classrooms to demonstrate how ICT can be infused across the curriculum. The IMYM model was assessed internally using action research strategies, as well as externally by ProActive, a Canadian educational research company. It was piloted in nearly 100 rural and urban schools throughout Manitoba, and is currently being implemented voluntarily in schools and school divisions across the province.

Interdisciplinary Middle Years and Early Years Multimedia (IMYM / IEYM) Units

Although the interdisciplinary multimedia model was initially targeted for the Middle Years, an additional interdisciplinary unit has been created for the Early Years to support educators in developing student literacy with ICT. Thematic concept-based interdisciplinary units developed by teams of Manitoba educators will be available for Grades 4 to 8:

- [Grade 4: Community and Diversity](#)
- [Grade 5: Climate Change](#)
- [Grade 6: Inventions, Innovations, and Discoveries](#)
- [Grade 7: Balance and Harmony](#)
- [Grade 8: Systems and Interactions](#)

Foundation Skill Areas and Other Integratables

To prepare students to become citizens of the global community, the Department identified the following as foundation skill areas to be developed across the curriculum from Kindergarten to Grade 12 (Manitoba Education and Training, *A Foundation for Excellence 16*):

- literacy and communication
- problem solving
- human relations
- technology

Although students have always focused on developing literacy skills such as reading, writing, and numeracy, today's students must also develop multiple literacies that will allow them to respond to changing ideas, attitudes, and technologies as their communities and their world evolve.

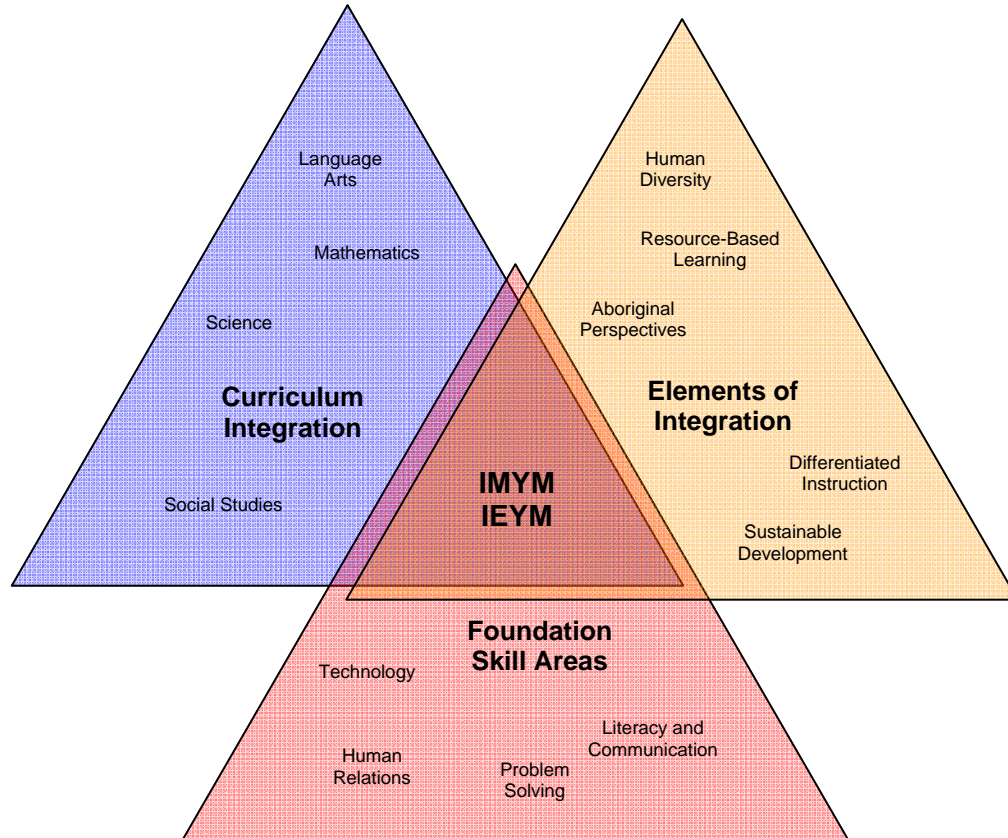
In 1998, with the publication of *Technology As a Foundation Skill Area: A Journey toward Information Technology Literacy*, the Department identified the following vision for the use of ICT in Manitoba schools:

The use of information technology will help enable all students to solve problems, improve their personal performance, and gain the critical and abstract thinking skills necessary to become lifelong learners and contributing members of their communities. (7)

In addition to integrating the foundation skill areas, all curriculum documents are to integrate the following elements, as specified in *A Foundation for Excellence* (16):

- curriculum integration
- resource-based learning
- differentiated instruction
- Aboriginal perspectives (this includes First Nations, Métis, and Inuit)
- human diversity
- sustainable development

As shown in the following illustration, the identified foundation skill areas and elements of integration were incorporated in the design and development of the interdisciplinary units, which draw connections among four subject areas: English language arts (ELA), mathematics, science, and social studies.



Literacy with ICT Across the Curriculum

Manitoba's *Literacy with ICT Across the Curriculum* initiative builds on the framework of *Technology As a Foundation Skill Area: A Journey toward Information Technology Literacy*. It incorporates promising practices from the current work of Kindergarten to Grade 8 classroom teachers, Manitoba schools and school divisions, Manitoba Education, Citizenship and Youth, and educational researchers.

In 2006, the Department released *A Continuum Model for Literacy with ICT Across the Curriculum: A Resource for Developing Computer Literacy* (hereafter referred to as *Literacy with ICT Across the Curriculum*). This document describes how students use ICT to enhance and extend their learning. Literate students make ethical and responsible choices when they use ICT to communicate their critical and creative thinking about textual, numerical, visual, and aural information as citizens of the global community. They develop this literacy through a process of inquiry across the curriculum as they

- plan and question
- gather and make sense
- produce to show understanding
- communicate
- reflect on their learning

Learning becomes more meaningful for students as they use the inquiry process to draw connections among four interdependent subject areas in each interdisciplinary unit. Each unit is centred on a real-world context where students use the inquiry process to acquire and apply their learning.

The Developmental Continuum for Literacy with ICT Across the Curriculum

Literacy with ICT Across the Curriculum: A Developmental Continuum (hereafter referred to as the *Developmental Continuum for Literacy with ICT*), released in 2006, paints a picture of how students develop their critical and creative thinking, in curricular contexts and through the responsible and ethical use of ICT. The educational principles that support the *Developmental Continuum for Literacy with ICT*, as well as detailed information on its structure, are available at www.edu.gov.mb.ca/k12/tech/lict/tell_me/.

The interdisciplinary model demonstrates how ICTs are infused with existing concepts across the curriculum rather than as a separate "curriculum." Since the focus is on what students can do, learners of any age are able to find themselves on the *Developmental Continuum for Literacy with ICT* and can use this vehicle to self-assess and set goals for their learning.

The *Developmental Continuum for Literacy with ICT* is one strategy used in the interdisciplinary units to assess for, as, and of learning. Within each of the interdisciplinary units, students create Electronic Collections and Electronic Portfolios, which you may use as part of authentic assessment. Students also share their Electronic Portfolios with their parents/guardians and peers as evidence of their learning.

Note

Keeping an Electronic Collection is an ongoing file-management process that can last the whole year. Creating an Electronic Portfolio occurs as an end process when students select electronic works completed in a given time period and organize and represent them in a form that features their accomplishments over that time.

The interdisciplinary model is an instructional model that supports literacy with ICT. As educators in Early Years and Middle Years classrooms, you can use the interdisciplinary model to integrate curricular concepts and incorporate promising teaching, learning, and assessment strategies to enhance student learning.

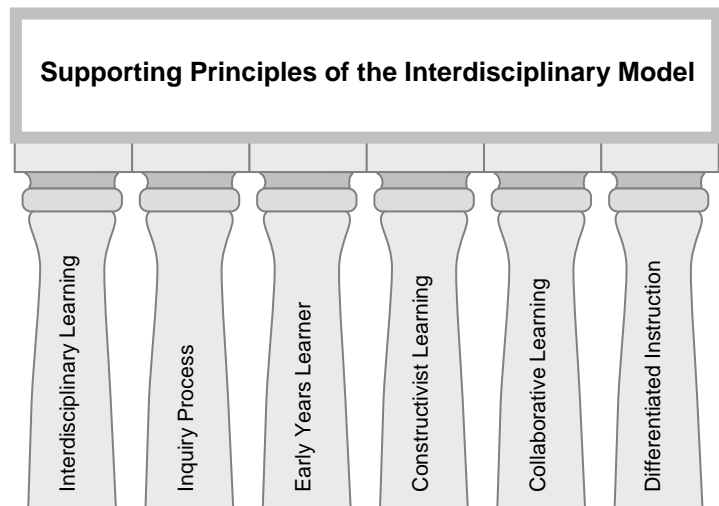
Further Reading

- Cruz, Bárbara C. "Global Education in the Middle School Curriculum: An Interdisciplinary Perspective." *Middle School Journal* 30.2 (Nov. 1998): 26–31.
- Erickson, H. Lynn, and Association for Supervision and Curriculum Development. *Planning Integrated Units: A Concept-Based Approach: Facilitator's Guide*. Videocassette and Facilitator's Guide. Alexandria, VA: Association for Supervision and Curriculum Development, 1997.
- Manitoba Education and Youth. *Exploring Characteristics of the IMYM Classroom*. Videocassette. Manitoba Education and Youth, 2003.
- Manitoba Education, Citizenship and Youth. *Interdisciplinary Middle Years Multimedia Model*. <www.edu.gov.mb.ca/k12/tech/imym/>.
- . *Rethinking Classroom Assessment with Purpose in Mind: Assessment for Learning, Assessment as Learning, Assessment of Learning*. Winnipeg, MB: Manitoba Education, Citizenship and Youth, 2006. Available online at <www.edu.gov.mb.ca/k12/assess/publications.html>.
- McBrien, J. L., and R. S. Brandt. *The Language of Learning: A Guide to Education Terms*. Alexandria, VA: Association for Supervision and Curriculum Development, 1997.
- Tomlinson, Carol Ann. "For Integration and Differentiation Choose Concepts over Topics." *Middle School Journal* 30.2 (Nov. 1998): 3–8.

SUPPORTING PRINCIPLES OF THE INTERDISCIPLINARY MODEL

The following concepts, processes, and methodologies are embedded in the interdisciplinary model and have become its supporting principles. As you implement the model in your classrooms and use the *Developmental Continuum for Literacy with ICT* to inform your teaching and learning practices, you may consider these supporting principles:

- interdisciplinary learning
- inquiry process
- Early Years learner
- constructivist learning
- collaborative learning
- differentiated instruction



Interdisciplinary Learning

Curricular Connections: Elements of Integration in the Classroom (Manitoba Education and Training) categorizes interdisciplinary learning as a “means to coordinate, blend, or bring together separate parts into a functioning, unified, and harmonious whole” (5). According to John D. McNeil, curricular integration assists students to identify the links, not only between ideas and processes within a single field, but also between ideas and processes, in separate fields, and in the world outside of school. An interdisciplinary approach “connects the interdependent knowledge and skills from more than one subject area to examine a central theme, issue, problem, topic, or experience. It is a holistic approach that stresses linkages” (*Curricular Connections* 6).

H. Lynn Erickson states:

Integration is a mental activity that relates new knowledge to prior knowledge and specific facts to deeper, transferable understandings. These connections are made by processing information through the organizing, conceptual schema in the brain. This integration of thinking should occur in discipline-based and interdisciplinary contexts to support deeper understanding and the transfer of knowledge. (*Integrated Curriculum, Overview*)

Effective interdisciplinary units include

- a conceptual theme that lends itself to study from several points of view
- two to five essential questions the teacher wants students to explore
- integrated learning experiences that deepen students’ understanding

Rather than studying ELA, mathematics, science, and social studies in isolation, the interdisciplinary model incorporates essential understandings and learning outcomes from the four curriculum areas into one conceptual “theme.”

Inquiry Process

Inquiry is a powerful methodology that engages students in pursuing personal, active, and authentic learning in depth. Students have opportunities to engage in inquiry through the following curricular perspectives:

- language arts as inquiry-based learning
- mathematics as problem solving in the context of data analysis
- science as scientific inquiry and the design process
- social studies as inquiry-based learning

These inquiry processes enable students to learn how to learn and to become self-directed learners. *Literacy with ICT Across the Curriculum* compares the curricular inquiry processes in a chart entitled Literacy with ICT and Inquiry Processes Across the Curriculum, which can be viewed at <www.edu.gov.mb.ca/k12/tech/licit/tell_me/inquiry_process.html>.

When using the inquiry process within the interdisciplinary model, students develop questions to guide their learning, research sources of information, synthesize new ideas, and share evidence of their understanding, all while reflecting on their learning.

Early Years Learner

The Implementation Overview of *Kindergarten to Grade 4 English Language Arts: A Foundation for Implementation* (Manitoba Education and Training) describes the Early Years learner as follows:

Students identified as Early Years students range from four to ten years of age. Kindergarten students and most students in Grade 1 are considered emergent literacy learners. Students in Grade 4 (and some in Grade 3) are moving into a transitional stage in which they are beginning to acquire many of the characteristics of the Middle Years learner. In order to meet the developmental needs of all students in Early Years classrooms, it is essential that teachers understand how children at these ages learn. (Overview–4)

For more information about the Early Years learner and learning environment, visit Manitoba's English Language Arts website at <www.edu.gov.mb.ca/k12/cur/ela/docs/earlyyears.html>.

Constructivist Learning

The basic premise of the constructivist learning model is that learners construct knowledge:

Constructivist learning theorist view learning as a highly interactive process, where students construct personal meaning from new information and ideas that are presented in socially supportive contexts. Learning depends on making connections between new information and previous experiences stored in long-term memory. To be meaningful, learning must be integrated with what is already known, and then applied in new situations. The complexity of understandings that students construct depends on the stage of cognitive development [they reach]. Conversely, as students mature, their understandings evolve and deepen as they move through stages of cognitive [and maturational] development.

Understanding is much more than remembering new information. For understanding to develop, knowledge must be internalized, transformed, and applied in new contexts. Students develop deeper understanding when they restructure and reorganize new information by deliberately applying a variety of reasoning skills. Over-riding these skills is critical thinking, which involves the use of specific criteria and evidence to make reasoned judgments. (*Literacy with ICT Across the Curriculum* 13)

As Audrey Gray reports, teachers have unique responsibilities within the constructivist classroom:

A constructivist teacher and a constructivist classroom exhibit a number of discernable qualities markedly different from a . . . direct instruction classroom. A constructivist teacher is able to flexibly and creatively incorporate ongoing experiences in the classroom into the negotiation and construction of lessons with small groups and individuals. The environment is democratic, the activities are interactive and student centered, and the students are empowered by a teacher who operates as a facilitator/consultant.

The constructivist approach to teaching and learning is central to the interdisciplinary model. When educators implement the model, their teaching changes from a transmissive model to a constructivist model, and they set up their classrooms using a student-centred approach to learning. The interdisciplinary model provides opportunities for students to collaborate, discuss, and share learning while they construct meaning. Your role as a classroom teacher shifts from disseminator of information to facilitator of active learning.

Collaborative Learning

Effective communication and collaboration are essential to becoming a successful learner. It is primarily through dialogue and through examining different perspectives that students become knowledgeable, strategic, self-determined, and empathetic. Involving students in real-world tasks and linking new information to prior knowledge requires effective communication and collaboration. Curriculum comes alive through dialogue and interaction. Collaborative learning affords students enormous advantages not available from direct instruction because a group—whether it be the whole class or a learning group within the class—can accomplish meaningful learning and solve problems.

The interdisciplinary model recognizes how collaborative learning has an impact on student learning. It incorporates the use of learning centres and various small-group tasks in each of the interdisciplinary units.

Differentiated Instruction

Throughout each interdisciplinary unit, learning experiences are designed to take into consideration any or all of the multiple intelligences, as identified by Howard Gardner:

- verbal/linguistic
- visual/spatial
- logical/mathematical
- bodily/kinesthetic
- musical/rhythmic
- interpersonal/social
- intrapersonal/introspective
- naturalist

Word processing, for example, requires a certain level of verbal/linguistic intelligence. Use of painting and drawing software often requires visual/spatial intelligence. Multimedia and web-based projects that incorporate text (verbal/linguistic intelligence), illustrations (visual/spatial), sounds (musical/rhythmic or verbal/linguistic), and video (bodily/kinesthetic) can be developed by and/or for individual students or groups of students. Students can also use multimedia and web page authoring software to create Electronic Collections and Electronic Portfolios. Students share their Electronic Portfolios with their parents/guardians and peers as evidence of their increasing competencies and for interpersonal and introspective opportunities.

Further Reading

- Cruz, Bárbara C. "Global Education in the Middle School Curriculum: An Interdisciplinary Perspective." *Middle School Journal* 30.2 (Nov. 1998): 26–31.
- Erickson, H. Lynn. "Overview." *Integrated Curriculum: A Chapter of the Curriculum Handbook*. Alexandria, VA: Association for Supervision and Curriculum Development, 2003. Available online at <www.ascd.org/portal/site/ascd/menuitem.1889bf0176da7573127855b3e3108a0c/>.
- Galas, Cathleen. "The Never-Ending Story: Questioning Strategies for the Information Age." *Learning and Leading with Technology* 26.7 (Apr. 1999): 10–13.
- Harvey, Stephanie. *Nonfiction Matters: Reading, Writing, and Research in Grades 3–8*. York, ME: Stenhouse, 1998.
- Machi, Angelica, and Leslie J. Kiernan. *Planning Integrated Units: A Concept-Based Approach: Facilitator's Guide*. Videocassette. Alexandria, VA: Association for Supervision and Curriculum Development, 1997.
- Manitoba Education and Training. *Curricular Connections: Elements of Integration in the Classroom: A Resource for Kindergarten to Senior 4 Schools*. Winnipeg, MB: Manitoba Education and Training, 1997.
- . *Success for All Learners: A Handbook on Differentiating Instruction: A Resource for Kindergarten to Senior 4 Schools*. Winnipeg, MB: Manitoba Education and Training, 1996. (See Chapter 5: Flexible Grouping.)
- Manitoba Education, Citizenship and Youth. "Pilot Evaluation Reports." *Interdisciplinary Middle Years Multimedia Model*. <www.edu.gov.mb.ca/k12/tech/imym/results/>.
- Tinzmann, M. B., B. F. Jones, T. F. Fennimore, J. Bakker, C. Fine, and J. Pierce. *What Is the Collaborative Classroom?* Oak Brook, IL: North Central Regional Educational Laboratory (NCREL), 1990.
- Tomlinson, Carol Ann. "For Integration and Differentiation Choose Concepts over Topics." *Middle School Journal* 30.2 (Nov. 1998): 3–8.

DEVELOPING AN INTERDISCIPLINARY UNIT FOR YOUR CLASSROOM

Current resources to assist in planning interdisciplinary units include the following blackline master (BLM) and PowerPoint presentation:

- BLM 9: The Four-Column Planner from *Independent Together: Supporting the Multilevel Learning Community* (Manitoba Education and Youth), available at www.edu.gov.mb.ca/k12/cur/multilevel/blm/blm_9.doc
- Part Three: Using the Four-Column Planner recommended in *Tutorial: How to Use the ELA Foundation for Implementation* (Manitoba Education, Citizenship and Youth), a PowerPoint presentation available at www.edu.gov.mb.ca/k12/cur/ela/ffi_slideshow2007.pps

Curricular Connections		Curricular Outcomes	Instructional Learning, Teaching, and Assessment Strategies*			Learning Assessment Outcomes
			Subject	Content	Assessment	
English	Language Arts		Identifying and recording prior knowledge			Identifying and recording prior knowledge
Mathematics			Exploring and relating primary and secondary sources			Exploring and relating primary and secondary sources
Science			Planning for inquiry			Planning for inquiry
Social Studies			Identifying, processing, and recording information			Identifying, processing, and recording information
Physical Education/Health Education			Planning for inquiry			Planning for inquiry
Information and Communication Technologies			Creating performance products			Creating performance products
Fine Arts			Collaborating and reflecting			Collaborating and reflecting

The planning process is discussed in Chapter 6 of *Independent Together*. You can use these planning tools to develop new interdisciplinary units.

The original interdisciplinary units were based on a planning process described in the video *Planning Integrated Units: A Concept-Based Approach* (Association for Supervision and Curriculum Development), which is available from the Instructional Resources Unit (IRU) Library.

Write the Learning Experiences

Use essential questions (science) and/or enduring understandings (social studies) to help you organize modules of learning experiences. Once you target specific learning outcomes (see *Tutorial* link above), use the provincial *Foundation for Implementation* documents to select activating, acquiring, and applying strategies for each learning experience that will scaffold student learning and guide them through their inquiry. Consider creating learning tasks in a real-world context that connect and add to the cumulative/culminating performance task so that, at the end of the unit, the performance task is completed and students are ready to celebrate their learning. Use the assessment strategies suggested in the *Foundation for Implementation* documents (ELA, mathematics, and science—column three; social studies—Appendix A) as a guide in determining how you and your students will know when they achieve the desired results.

Further Reading

Drake, Susan M. *Integrated Curriculum: A Chapter of the Curriculum Handbook*. Alexandria, VA: Association for Supervision and Curriculum Development, 2000. Available online at www.ascd.org/portal/site/ascd/menuitem.1889bf0176da7573127855b3e3108a0c/.

Erickson, H. Lynn. *Stirring the Head, Heart and Soul: Redefining Curriculum and Instruction*. 2nd ed. Thousand Oaks, CA: Corwin Press, Inc., 2001.

Manitoba Education, Citizenship and Youth. "Inquiry Planning Model." *English Language Arts*. www.edu.gov.mb.ca/k12/cur/ela/docs/planning3-5to8.html#Sample:%20An%20Inquiry%20Planning%20Model.

---. "Learning through Guided Inquiry." *Independent Together: Supporting the Multilevel Community*. 2006. www.edu.gov.mb.ca/k12/cur/multilevel/integrated_inquiry.html.

ORGANIZATION OF THE INTERDISCIPLINARY UNITS

Unit Components



Each interdisciplinary unit is designed so that students work individually and collaborate in groups, assuming roles used within real-world contexts. Students present the results of their inquiry at a simulated group presentation. Each unit consists of three instructional components consisting of a variety of learning experiences.

Instructional Components of the Interdisciplinary Units	
Ongoing Learning Experiences (OLEs) OLEs are daily, weekly, and monthly learning experiences that begin in September and continue throughout the school year.	Information and Communication Technology (ICTs) Learning Experiences Students and educators use the ICT learning experiences if they need to familiarize themselves with specific skills and processes that will later be used within the interdisciplinary units. These learning experiences are focused around curricular topics and/or tasks relating to the units.
	Unit Modules The modules, beginning with The Big Picture, consist of learning experiences that scaffold the learning for students and prepare them to create their cumulative/culminating performance task.

Overview

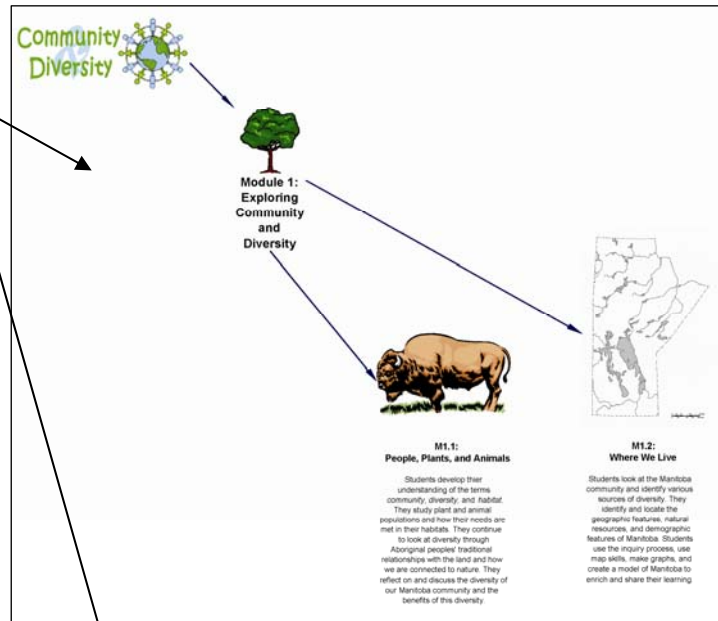
The overview for each unit links to each component overview and all the individual learning experiences and resources.

The modules are organized into learning experiences relating to the conceptual theme. This organization enables the scaffolding of student learning through each of the learning experiences.

 	
Community and Diversity: A Grade 4 Interdisciplinary Early Years Multimedia (IEYM) Unit for Teachers	
Introduction	
Ongoing Learning Experiences (OLEs)	Information and Communication Technology (ICT) Learning Experiences
OLE.1: Personal Binder OLE.2: Daily Edit OLE.3: Daily Math and Problem Solving OLE.4: Reading Circles OLE.5: Share the Learning OLE.6: Collaborative Learning OLE.7: Speak Ye! Hear Ye! OLE.8: Reflection Journal OLE.9: Newspapers OLE.10: Electronic Collection	ICT.1: Toolbox Binder ICT.2: Write This Down ICT.3: Riddle This ICT.4: Looks Like This ICT.5: Inspired ICT.6: Caught in Action ICT.7: Make Your Point ICT.8: Look for It: Learning to Search the Internet ICT.9: Chart This
Appendices Appendix A: Essential Understandings and Guiding Questions Appendix B: Curriculum Outcomes and Literacy with ICT Continuum Descriptors Appendix C: Index of Teaching, Learning, and Assessment Strategies Appendix D: Blackline Masters (BLMs) and Teacher Blackline Masters (TBLMs)	The Big Picture BP.1: What's in Store? <i>Canadian Youth Forum</i> (PowerPoint Presentation) Module 1: Exploring Community and Diversity M1.1: People, Plants, and Animals M1.2: Where We Live Module 2: Interacting with Community and Diversity M2.1: Adapting and Interacting M2.2: Diverse Cultures Module 3: Valuing Community and Diversity M3.1: Conserving Diversity M3.2: Respecting Diversity Module 4: Celebrating Community and Diversity M4.1: A Celebration of Learning
Bibliography	
Culminating Performance Task: <i>Canadian Youth Forum: Celebrating Community and Diversity</i>	

Each component of the interdisciplinary units (OLEs, ICTs, and modules) begins with a summary (in graphic and table format, as shown in the examples provided). This summary can guide you in developing your own schedule for the instruction and assessment of each learning experience. The table format provides an estimated timeframe and a brief explanation of the focus for each learning experience within that specific module.

The number of learning experiences in each unit may exceed the timeframe you allot for the unit; therefore, you may wish to be selective in choosing learning experiences, and reassess which specific learning outcomes will be targeted.



Module 1: Exploring Community and Diversity				
<p>In Module 1 of the <i>Community and Diversity</i> interdisciplinary unit, students develop their knowledge of habitats and communities and begin to explore what diversity is all about. Students familiarize themselves with various aspects of Aboriginal traditional knowledge and how it applies to our relationship with nature today. They identify the geographic features and natural resources across the regions of Manitoba.</p> <p>The two learning experiences (LEs) that make up Module 1 are described below.</p>				
LE Title	Estimated Time	LE Overview	Aboriginal Perspectives	Learning Centres
M1.1: People, Plants, and Animals	500 minutes	In this learning experience, students develop their understanding of the terms <i>community</i> , <i>diversity</i> , and <i>habitat</i> . They begin building a collaborative Electronic Dictionary. They study plant and animal populations, focusing on how their needs are met in their habitats and observing and gathering data on a plant or an animal population. Through oral presentations, students become aware of Aboriginal peoples' traditional relationships with the land and of how people are connected to nature. They reflect on and discuss how diverse our Manitoba community is and what benefits this diversity brings to our community.	Elder is invited as guest speaker. Students read, and share their learning about, Aboriginal stories and legends.	<ul style="list-style-type: none"> • BLM M1.1#1: Electronic Dictionary Learning Centre • BLM M1.1#3: Connecting with Nature Learning Centre • BLM M1.1#6: Animal Habitats Learning Centre • BLM M1.1#8: Plant Habitats Learning Centre
M1.2: Where We Live	420 minutes	Students look at where they live—their local and Manitoba community—and identify various sources of diversity. They identify the geographic features, natural resources, and demographic features of Manitoba, locating them on a map. They use the inquiry process, use map skills, and make graphs to enrich their learning. They use Photo Story and create a model of Manitoba to represent and share their learning.		<ul style="list-style-type: none"> • BLM M1.2#2: Where Am I? Learning Centre • BLM M1.2#4: Manitoba Map Search Learning Centre • BLM M1.2#5: Demographics Learning Centre

Organization of Learning Experiences

The learning experiences within each component of the interdisciplinary units follow a similar organization and contain the following headings and subheadings:

- Learning Experience (title and number)
- Time (suggested time allocation for the learning experience)
- Overview (of the learning experience)
- Specific Learning Outcomes and Literacy with ICT Continuum Descriptors
- Suggested Learning Resources (including learning centres, where applicable)
- Suggestions for Instruction
- Suggestions for Assessment
- Connection to Cumulative/Culminating Performance Task

A description of each component follows (along with an example).

Learning Experience Title and Number

The learning experiences within each of the OLEs, ICTs, and modules have a title and a number, which are referenced throughout the unit.

- The title appears at the top of the first page of each learning experience.
- The learning experiences are numbered sequentially within the OLEs, ICTs, and modules. The number of the learning experience appears on the top right-hand corner of the pages on which they begin.

Time

The time allocation suggested for each learning experience or part of a learning experience within the unit serves as a guide to the unit planning and learning experiences.

Overview

The overview gives a brief synopsis of a given learning experience, describing its purpose and summarizing student learning tasks.

Specific Learning Outcomes and Literacy with ICT Continuum Descriptors

Specific learning outcomes (SLOs) from Manitoba's *Curriculum Framework of Outcomes* documents are identified and form the basis for each learning experience, which builds on the conceptual theme for that specific unit component or module. The learning experiences identify SLOs from the following curriculum areas:

- English language arts
- mathematics
- science
- social studies
- Aboriginal languages and cultures

Community and Diversity: IEYM4 M1.1

People, Plants, and Animals M1.1

TIME
500 minutes

OVERVIEW
In this learning experience, students develop their understanding of the terms *community*, *diversity*, and *habitat*. They begin building a collaborative Electronic Dictionary. They study plant and animal populations, focusing on how their needs are met in their habitats and observing and gathering data on a plant or an animal population. Through oral presentations, students become aware of Aboriginal peoples' traditional relationships with the land and of how people are connected to nature. They reflect on and discuss how diverse our Manitoba community is and what benefits this diversity brings to our community.

SPECIFIC LEARNING OUTCOMES AND LITERACY WITH ICT CONTINUUM DESCRIPTORS
Think about the intent of this learning experience (LE) and how you will facilitate instruction and assessment to meet your students' learning needs.

- What do your students need to know, be able to do, think, and feel at the end of this LE?
- What specific learning outcomes (SLOs) will guide instruction, learning, and assessment through this LE?

During instruction and assessment, students build understanding of interdisciplinary content through English language arts (ELA) and literacy with ICT. Therefore, target the SLOs in ELA and the descriptors in the Literacy with ICT Continuum that reflect your students' learning needs at this time of the year. Target two or three SLOs from each of the other subject areas for instruction and assessment. While additional SLOs will be uncovered and demonstrated, they may not be the focus of assessment. The targeted SLOs, descriptors, and criteria for observation can then be copied to the Focused Observation Form, available online at www.edu.gov.mb.ca/k12/cur/multilevel/blm/blm_5.doc.

English Language Arts

- 2.2.1 *Experience Various Texts*—Experience texts from a variety of forms and genres [such as personal narratives, plays, adventure stories, mysteries . . .] and cultural traditions; share responses.
- 2.2.2 *Connect Self, Texts, and Culture*—Identify similarities and differences between personal experiences and the experiences of people from various cultures portrayed in oral, literary, and media texts [including texts about Canada or by Canadian writers].
- 2.3.5 *Create Original Texts*—Create original texts [such as murals, scripts for short plays, descriptive stories, charts, poems . . .] to communicate and demonstrate understanding of forms and techniques.

In addition, each learning experience targets a variety of descriptors from the Cognitive Domain of the *Developmental Continuum for Literacy with ICT*, under the following Big Ideas:

- Plan and Question
- Gather and Make Sense
- Produce to Show Understanding
- Communicate
- Reflect

The numbers and codes that accompany the SLOs and ICT continuum descriptors cited in each unit correspond to the reference systems explained in the respective documents.

	COGNITIVE DOMAIN		
	Knows-Comprehends-Recalls	Analyzes-Applying	Synthesizes-Evaluates
Plan and Question	<p>P.1.1 Analyze information to plan knowledge and skills to be used in the future.</p> <p>P.1.2 Develop a plan to solve a problem.</p>	<p>P.2.1 Analyze a text and explain what has happened in the past and predict what will happen in the future.</p> <p>P.2.2 Analyze a text and explain what has happened in the past and predict what will happen in the future.</p>	<p>P.3.1 Analyze a text and explain what has happened in the past and predict what will happen in the future.</p> <p>P.3.2 Analyze a text and explain what has happened in the past and predict what will happen in the future.</p>
Gather and Make Sense	<p>G.1.1 Analyze information to plan knowledge and skills to be used in the future.</p> <p>G.1.2 Develop a plan to solve a problem.</p>	<p>G.2.1 Analyze a text and explain what has happened in the past and predict what will happen in the future.</p> <p>G.2.2 Analyze a text and explain what has happened in the past and predict what will happen in the future.</p>	<p>G.3.1 Analyze a text and explain what has happened in the past and predict what will happen in the future.</p> <p>G.3.2 Analyze a text and explain what has happened in the past and predict what will happen in the future.</p>

As you approach a module within the unit, think about the intent of each learning experience and how you will facilitate instruction and assessment to meet your students' learning needs.

- What do your students need to know, be able to do, think, and feel at the end of this learning experience?
- What SLOs will guide instruction, learning, and assessment through this learning experience?

During instruction and assessment, students build understanding of interdisciplinary content through English language arts (ELA) and literacy with ICT. Therefore, target the SLOs in ELA and the descriptors in the *Developmental Continuum for Literacy with ICT* that reflect your students' learning needs at a particular time of the year. Target two or three SLOs from each of the other subject areas for instruction and assessment. While additional SLOs will be uncovered and demonstrated, they may not be the focus of assessment. The targeted SLOs, descriptors, and criteria for observation can then be copied to a Focused Observation Form (see BLM 5: Focused Observation Form in *Independent Together*, available online at www.edu.gov.mb.ca/k12/cur/multilevel/blm/).

Refer to Appendix B for a list of the SLOs from the respective curriculum documents and the descriptors from the *Developmental Continuum for Literacy with ICT* that students may achieve through the respective interdisciplinary units.

Suggested Learning Resources

The learning resources suggested for the learning experiences are listed under the following categories:

- **Software**
Software recommended for each learning experience is listed for planning purposes.
- **Internet**
For a regularly updated listing of websites related to each interdisciplinary unit, refer to the Interdisciplinary Middle Years Multimedia (IMYM) Links Database at www.edu.gov.mb.ca/k12/tech/imym/resources/links.html.
- **Print, Video, and Electronic Resources**
A wide range of print, video, and electronic resources are suggested within the learning experiences to encourage a resource-based approach to learning and to support student inquiry.

- **Blackline Masters (BLMs) and Teacher Blackline Masters (TBLMs)**
 - **BLMs:** Learning experiences include electronic BLMs intended for student use. You may choose to adapt them as required. References are also made to BLMs from other provincial curriculum and support documents.
 - **TBLMs:** Each unit offers instructional and assessment supports in the form of TBLMs. The TBLMs include guidelines for assignments, background information, and assessment forms.

The BLMs and TBLMs are numbered consecutively within each learning experience. For a comprehensive list of BLMs and TBLMs, refer to Appendix D.
- **Materials**
Resources that do not belong in the above categories are listed here. They include common classroom supplies, resources for experiments, charts, and so on.

Suggestions for Instruction

The instructional suggestions include the following components:

- **Preparation and Set-up:** Suggestions are provided to help you prepare for each learning experience.
- **Activating, Acquiring, and Applying Strategies:** The teaching and learning strategies suggested in each learning experience integrate two or more curricular areas, including the infusion of ICT. Strategies are arranged into the three steps of active learning, as described in *Success for All Learners* (Manitoba Education and Training, Chapter 6):
 - **Activating** strategies focus student learning, activate prior knowledge, and help students connect new learning to what they already know.
 - **Acquiring** strategies guide students through an active process of making meaning out of new information and integrating it with earlier understanding.
 - **Applying** strategies facilitate reflection and retention, helping students to make connections between new knowledge and prior knowledge and consider how their learning applies to new situations.

Some learning experiences include **learning centres**. Consider your teaching preferences, class size, classroom environment, and resources when opting to set up the learning centres. Some learning centres will be ongoing for the entire unit so students can create and refine sections of their cumulative/culminating performance task. In most circumstances a combination of whole-class interaction and rotation through learning centres will take place.

- **Variations/Extensions:** Some learning experiences suggest instructional strategies for challenging students further.

Suggestions for Assessment

Rethinking Classroom Assessment with Purpose in Mind (Manitoba Education, Citizenship and Youth) identifies three distinct, yet related, purposes of assessment:

- **Assessment for learning** is designed to give teachers information to modify and differentiate teaching and learning activities.
- **Assessment as learning** is a process of developing and supporting metacognition for students. It focuses on the role of the students as the critical connector between assessment and learning.
- **Assessment of learning** is summative and is used to confirm what students know and can do.

Suggestions for assessment for/as/of learning support individual and collaborative learning. The Big Picture or overview of a unit is a good place to see how the units are planned with the end in mind and provide students with opportunities to set goals, plan their learning, and give and receive reflective feedback.

It is recommended that you use the Focused Observation strategy throughout the unit. As described in *Independent Together* (3.3), quality classroom observation is dependent on

- achievable learners' goals
- targeted learning outcomes
- clear criteria
- a variety of authentic learning and teaching contexts
- insightful, systematic monitoring of what teachers see and hear

For additional information on classroom observation, refer to Chapter 3 of *Independent Together*. For a sample tool that could be used for classroom observation, see BLM 5: Focused Observation Form in *Independent Together*, available online at <www.edu.gov.mb.ca/k12/cur/multilevel/blm/>.

You are encouraged to make appropriate adjustments to the assessment strategies suggested in a unit based on individual students' learning needs, the targeted learning outcomes, the criteria set by you and your students, and school reporting criteria. For information on the process of constructing criteria, see BLM 2: Constructing Student-Generated Criteria for Quality Work in *Independent Together*, available online at <www.edu.gov.mb.ca/k12/cur/multilevel/blm/>. Criteria for assessing targeted learning outcomes can be found in the provincial *Foundation for Implementation* documents.

Connection to the Cumulative/Culminating Performance Task

Each learning experience within the modules includes a description of how completing that learning experience leads to the completion of the cumulative/culminating performance task of an interdisciplinary unit.

Appendices

The following appendices are included for each interdisciplinary unit:

- **Appendix A: Essential Understandings and Guiding Questions** lists the essential understandings emerging from each unit and the guiding questions suggested for inquiry that promote higher level thinking in students.
- **Appendix B: Curriculum Outcomes and Literacy with ICT Continuum Descriptors** lists the ELA, mathematics, science, social studies, and Aboriginal languages and cultures learning outcomes and the descriptors from the *Developmental Continuum for Literacy with ICT* that students may achieve through the learning experiences in each unit.
- **Appendix C: Index of Teaching, Learning, and Assessment Strategies** lists the teaching, learning, and assessment strategies used throughout the unit, some of which are referenced from several provincial curriculum and support documents.
- **Appendix D: Blackline Masters (BLMs) and Teacher Blackline Masters (TBLMs)** lists the BLMs and TBLMs included in the unit. They are listed in the order in which they first appear within the unit. Although the BLMs and TBLMs are specific to a learning experience, many can easily be adapted for use in other learning situations throughout the unit, as well as for other areas of study. Many BLMs from other curriculum and support documents are also referenced within the interdisciplinary unit.

Bibliography

The Bibliography cites the references used in developing an interdisciplinary unit, as well as additional suggested print, video, and electronic resources useful for educators and students.

Although the resources listed in the Bibliography have not been reviewed, you can access most of the titles in the holdings of the Instructional Resources Unit (IRU) Library (1181 Portage Ave., Winnipeg, MB) at <<http://library.edu.gov.mb.ca:4100/>>.

IMPLEMENTING THE INTERDISCIPLINARY MODEL IN THE CLASSROOM

Classroom Set-up

Reflect on the supporting principles of the interdisciplinary model and determine how you will set up your classroom to facilitate the implementation of the model. You may choose to implement the model throughout the school year as part of your literacy with ICT goals, or you may choose to experiment with an interdisciplinary unit during a four-to-six-week period of the school year. Regardless of which scenario you choose, it is suggested that you begin the school year by introducing the Ongoing Learning Experiences (OLEs) in September as part of your classroom routines. Also take time to consider the goals and outcomes of the interdisciplinary unit and use formative assessment strategies (such as Focused Observation, KWL, and the *Developmental Continuum for Literacy with ICT*) to determine whether any of the Information and Communication Technology (ICT) Learning Experiences are needed to prepare students to perform the tasks within the interdisciplinary unit.

You may choose to proceed with the modules of the interdisciplinary unit at any point during the school year; however, choosing a six-to-eight-week timeframe that is not interrupted by ongoing events or school breaks is ideal. January to March offers such an interval.

Set up the interdisciplinary classroom for learning centres as needed throughout the unit. In addition, set up computers in a flexible configuration to allow for maximum student access. The following list of suggested hardware and software provides an overview for setting up an interdisciplinary classroom.

Hardware	Software
<ul style="list-style-type: none"> • classroom computers with Internet access • multimedia presentation device (such as a large-screen television, data projector, or electronic whiteboard) • printer • digital camera • storage device 	Software suggested throughout the unit: <ul style="list-style-type: none"> • collaborative online tools for educational use • concept mapping • email • graphics creation • multimedia authoring • painting and drawing • photo editing • spreadsheet with database functions • web page authoring • word processing

The interdisciplinary units are designed with flexible groupings in mind. For a discussion of a variety of classroom set-ups for instruction in whole-class, small-group, or individual settings, and for suggested strategies that work well in each situation, refer to Chapter 5: Flexible Grouping in *Success for All Learners* (Manitoba Education and Training).

Before embarking on a particular unit, decide how your students will (or will not) be grouped. For example, will students sometimes work on their own, in expert groups, and/or in home groups? You may want to organize home groups for students to create the cumulative/culminating performance task together, but use expert groups for specific learning tasks. The expert groups can then report back to the home groups and share their learning (see OLE 5: Share the Learning).

You may choose to use the interdisciplinary model for a few weeks during the school year or as your teaching and learning style for the entire year. In any case, engaging your students in authentic learning situations and targeting learning outcomes across the curriculum will make your classroom an exciting and memorable place for your students—and for you!

Further Reading

2Learn.ca Education Society. “Elements of Collaborative Learning.” *Project Basics: Show Me How*. 1997–2008. <www.2learn.ca/projects/together/classroom.html>.

ETHICAL AND PERSONAL CONSIDERATIONS



















When you implement the interdisciplinary model, and as your students become literate with ICT, there is a need to be aware of many legal, ethical, and personal issues.

The Affective Domain descriptors in the *Developmental Continuum for Literacy with ICT* refer to Ethics and Responsibility and Social Implications related to using ICT.

The Affective Domain contains descriptors referring to feelings and attitudes toward the use of ICT. It consists of three stages across the horizontal axis of the continuum:

- The first stage involves developing an awareness of issues related to using ICT under conditions that require external control.
- The second stage involves developing, analyzing, and applying intrinsic beliefs about the issues related to using ICT.
- The third stage involves adhering to an internal value system that controls personal behaviour related to using ICT.

As well as incorporating the Affective Domain descriptors in your classroom planning, check with your school and school division policy regarding publishing student work on the Internet and sharing digital images to determine whether parental permission forms need to be collected from students.

AFFECTIVE DOMAIN			
	Knows Comprehends Becomes Aware	Analyzes Applies Believes	Synthesizes Evaluates Values
Ethics and Responsibility	E-1.1 respects ICT equipment and personal technology space of other ICT users 	E-2.1 applies school division's acceptable-use policy for ICT 	E-3.1 evaluates effects of personal ICT behaviour on others 
	E-1.2 recognizes guidelines for safety and security 	E-2.2 applies safety guidelines when communicating electronically 	E-3.2 weighs personal benefits and risks of using ICT 
	E-1.3 recognizes the need to acknowledge authorship of intellectual property 	E-2.3 explains consequences of unethical behaviour 	
	E-1.4 identifies possible health issues associated with using ICT 	E-2.4 applies guidelines for ethical and responsible use of ICT 	
Social Implications	S-1.1 identifies uses of ICT at home, at school, at work, and in the community 	S-2.1 analyzes current trends in ICT to predict effects of emerging technologies 	S-3.1 weighs society's right to information access against right to individual privacy 
	S-1.2 relates societal consequences of ethical and unethical use of ICT 	S-2.2 analyzes various ICT skill and competency requirements for personal career choices 	S-3.2 weighs benefits versus risks to society of creating new ICTs 
	S-1.3 chooses appropriate times and places to use wireless games and/or communication devices 	S-2.3 analyzes advantages and disadvantages of ICT use in society 	

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