Appendices

Appendix A:
Essential Understandings and Guiding Questions

Appendix A lists the essential understandings emerging from this concept-based *Inventions, Innovations, and Discoveries* interdisciplinary unit, and the guiding questions suggested for inquiry that promote higher-level thinking in students.

Major Concepts

- English Language Arts Communications
- Mathematics Change
- Science Improvement
- Social Studies Human Needs

Essential Understandings

- People make inventions to meet their needs.
- People innovate to meet their changing needs better.
- People make discoveries in their quest to understand and control their environment.

Guiding Questions

- How do people determine what their needs are?
- What is the difference between needs and wants?
- Are all inventions useful to everyone?
- How do changes in the environment affect human needs?
- Does technology play a role in improving human needs?
- What is the impact of inventions on work (e.g., in farming, construction, medicine)?
- What are some Canadian inventions that have had an impact on the life of people in Canada and around the world?
- What are some inventions that affect leisure time?
- What role has electricity played in inventions?
- Can technology facilitate communications?
- What is the role of communications in sharing information that could improve human needs?
- Has the purpose of major inventions changed over time? If so, how?
- What kinds of innovations are being made to inventions?
- Are discoveries still being made today?
- What kinds of discoveries are still being made today?

Information about planning integrated units can be found in the following resource:

- Erickson, H. Lynn. *Planning Integrated Units: A Concept-Based Approach.* Videocassette. Alexandria, VA: ASCD, 1997. Includes a facilitator's guide.

Appendix B:
Grade 6 Curricular Outcomes and ICT Literacy Skills and Competencies

Through the learning experiences (LEs) in the *Inventions, Innovations, and Discoveries* interdisciplinary unit, students will achieve specific learning outcomes (SLOs) identified for Grade 6 in the core subject areas:

- English Language Arts
- Mathematics
- Science
- Social studies

Students will also achieve information and communication technology (ICT) literacy skills and competencies identified for the Middle Years.

The Grade 6 subject-specific learning outcomes and the Middle Years ICT literacy skills and competencies cited in *Inventions, Innovations, and Discoveries* are identified in the following Manitoba curriculum documents:

- Manitoba Education and Training. *Grades 5 to 8 English Language Arts: Manitoba Curriculum Framework of Outcomes and Grade 6 Standards.* Winnipeg, MB: Manitoba Education and Training, 1996.
- ---. *Grades 5 to 8 Mathematics: Manitoba Curriculum Framework of Outcomes and Grade 6 Standards.* Winnipeg, MB: Manitoba Education and Training, 1996.
- ---. *Grades 5 to 8 Science: Manitoba Curriculum Framework of Outcomes.* Winnipeg, MB: Manitoba Education and Training, 2000.
- ---. *Technology As a Foundation Skill Area: A Journey toward Information Technology Literacy: A Resource for Curriculum Developers, Teachers, and Administrators.* Winnipeg, MB: Manitoba Education and Training, 1998.
- Manitoba Education and Youth. *Kindergarten to Grade 8 Social Studies: Manitoba Curriculum Framework of Outcomes.* Winnipeg, MB: Manitoba Education and Youth, 2003.

Appendix B lists SLOs from the Grade 6 English Language Arts, Mathematics, Science, and Social Studies curricula that students may achieve through this interdisciplinary unit. It also cites the ICT literacy skills and competencies that students may achieve. The numbers and codes that accompany the outcomes cited in the unit correspond to the reference system explained in the original curriculum documents.

English Language Arts (Grade 6)

GLO 1: Explore thoughts, ideas, feelings, and experiences.

1.1.1 *Express Ideas* — Engage in exploratory communication to share personal responses, make predictions, and discover own interpretations.

1.1.2 *Consider Others' Ideas* — Select from others' ideas and observations to develop thinking and understanding.

1.1.3 *Experiment with Language and Form* — Experiment with new forms of self-expression.

1.1.4 *Express Preferences* — Assess personal collection of favourite oral, literary, and media texts and discuss preferences for particular forms.

1.1.5 *Set Goals* — Assess personal language use and revise personal goals to enhance language learning and use.

1.2.1 *Develop Understanding* — Reflect on prior knowledge and experiences to arrive at new understanding.

1.2.2 *Explain Opinions* — Explain personal viewpoints in clear and meaningful ways and revise previous understanding.

1.2.3 *Combine Ideas* — Search for ways to reorganize ideas and information to extend understanding.

1.2.4 *Extend Understanding* — Appraise ideas for clarity and ask extending questions; select from others' experiences and ideas to extend ways of knowing the world.

GLO 2: Comprehend and respond personally and critically to oral, literary, and media texts.

2.1.1 *Prior Knowledge* — Seek connections between previous experiences, prior knowledge, and a variety of texts.

2.1.2 *Comprehension Strategies* — Use comprehension strategies [such as asking questions, making notes, adjusting reading rate…] appropriate to the type of text and purpose [including summarizing, outlining, remembering ideas, and responding personally].

2.1.3 *Textual Cues* — Use textual cues [such as organizational structures of narrative and expository texts, headings, glossaries, margin notes...] to construct and confirm meaning.

2.1.4 *Cueing Systems* — Use syntactic, semantic, and graphophonic cueing systems [including word order; context clues and multiple meanings of words; structural analysis to identify roots, prefixes, and suffixes] to construct and confirm meaning; use a dictionary to determine word meaning in context.

2.2.1 *Experience Various Texts* — Seek opportunities to experience texts from a variety of forms and genres [such as autobiographies, travelogues, comics…] and cultural traditions; share responses.

2.2.2 *Connect Self, Texts, and Culture* — Discuss own and others' understanding of various community and cultural traditions in various places and times as portrayed in oral, literary, and media texts [including texts about Canada or by Canadian writers].

2.2.3 *Appreciate the Artistry of Texts* — Identify descriptive and figurative language in oral, literary, and media texts and discuss how it enhances understanding of people, places, and actions.

2.3.1 *Forms and Genres* — Recognize key characteristics of various forms and genres of oral, literary, and media texts [such as novels, biographies, autobiographies, myths, poetry, drawings and prints…].

2.3.2 *Techniques and Elements* — Identify significant elements and techniques in oral, literary, and media texts, and examine how they interact to create effects.

2.3.3 *Vocabulary* — experiment with ambiguity in language [such as puns, jokes based on multiple meanings, poetry…] in a variety of contexts.

2.3.4 *Experiment with Language* — Alter words, forms, and sentence patterns to create new versions of texts for a variety of purposes [such as humour…]; explain ways in which figures of speech [such as similes, metaphors…] clarify and enhance meaning.

2.3.5 *Create Original Texts* — Create original texts [such as letters, short stories, media broadcasts, plays, poems, video presentations, Readers Theatre…] to communicate and demonstrate understanding of forms and techniques.

GLO 3: Manage ideas and information.

3.1.1 *Use Personal Knowledge* — Summarize and focus personal knowledge of a topic to determine information needs.

3.1.2 *Ask Questions* — Formulate relevant questions to focus information needs for an inquiry.

3.1.3 *Contribute to Group Inquiry* — Contribute to group knowledge of topics to help identify and focus information needs, sources, and purposes for group inquiry or research.

3.1.4 *Create and Follow a Plan* — Create and follow a plan to collect and record information within a pre-established time frame.

3.2.1 *Identify Personal and Peer Knowledge* — Recall, record, and organize personal and peer knowledge of a topic for inquiry or research.

3.2.2 *Identify Sources* — Answer inquiry and research questions using a variety of information sources [such as bulletin boards, art, music, skilled community people, CD-ROMs, Internet…].

3.2.3 *Assess Sources* — Recognize that information serves different purposes and determine its usefulness for inquiry or research focus using pre-established criteria.

3.2.4 *Access Information* — Use a variety of tools [including bibliographies, thesauri, and technology] to access information and ideas; use visual and auditory cues [such as captions, intonation, staging…] to identify relevant information.

3.2.5 *Make Sense of Information* — Use organizational patterns of oral, visual, and written texts [including main ideas and supporting details, explanation, comparison and contrast, cause and effect, and sequence] to construct meaning; skim, scan, and read closely to gather information.

3.3.1 *Organize Information* — Organize information and ideas using a variety of strategies and techniques [such as comparing and contrasting, classifying and sorting according to subtopics, sequences, order of priority or importance...]

3.3.2 *Record Information* — Make notes on a topic, combining information from more than one source; reference sources appropriately.

3.3.3 *Evaluate Information* — Evaluate the appropriateness of information for a particular form, audience, and purpose; identify gaps in information collected and gather additional information.

GLO 4: Enhance the clarity and artistry of communication.

4.1.1 *Generate Ideas* — Focus a topic for oral, written, and visual texts integrating ideas from experiences and a variety of other sources.

4.1.2 *Choose Forms* — Select specific forms [such as diaries, narratives, speeches, letters, poetry, mime...] that serve particular audiences and purposes.

4.1.3 *Organize Ideas* — Adapt models from listening, reading, and viewing experiences to enhance own oral, written, and visual texts using organizational patterns [such as stanzas, chronological order, paragraphs...].

4.2.1 *Appraise Own and Others' Work* — Share own stories and creations at appropriate times during revision and use criteria to provide feedback for others and to revise and assess own work and presentations.

4.2.2 *Revise Content* — Revise to eliminate unnecessary information.

4.2.3 *Enhance Legibility* — Write legibly and at a pace appropriate to context and purpose when composing and revising; select and use a variety of formatting options [such as spacing, graphics, titles and headings, variety of font sizes and styles...] when appropriate.

4.2.4 *Enhance Artistry* — Choose language, sounds, and images [including transitional devices] to enhance meaning and emphasis.

4.2.5 *Enhance Presentation* — Prepare detailed and organized compositions, presentations, reports, and inquiry or research projects using templates or pre-established organizers.

4.3.1 *Grammar and Usage* — Edit for subject-verb agreement, appropriate verb tense, and correct pronoun references.

4.3.2 *Spelling* — Know and apply spelling conventions using appropriate strategies [including structural analysis, syllabication, and visual memory] and spelling patterns when editing and proofreading; use a variety of resources to determine the spelling of common exceptions to conventional spelling patterns.

4.3.3 *Punctuation and Capitalization* — Know and apply capitalization and punctuation conventions in compound sentences, titles, headings, salutations, and addresses when editing and proofreading.

4.4.1 *Share Ideas and Information* — Share information on a topic with class members in a planned and focused group session using a variety of strategies [such as interactive dialogues, demonstrations, dramatizations, audiovisual and artistic representations…].

4.4.2 *Effective Oral Communication* — Use appropriate volume, phrasing, intonation, non-verbal cues [such as body language, facial expression...], and presentation space to enhance communication.

4.4.3 *Attentive Listening and Viewing* — Demonstrate critical listening and viewing skills and strategies [such as recognizing main idea and details, identifying inference...] and show respect for presenter(s) through appropriate audience behaviours [such as giving non-verbal encouragement, responding to emotional aspects of the presentation...].

GLO 5: Celebrate and build community.

5.1.1 *Compare Responses* — Compare personal ways of responding and thinking with those of others.

5.1.2 *Relate Texts to Culture* — Incorporate language from oral, literary, and media texts to describe personal perspectives on cultural representations.

5.1.3 *Appreciate Diversity* — Observe and discuss aspects of human nature revealed in personal experiences and in oral, literary, and media texts; recognize personal participation and responsibility in communities.

5.1.4 *Celebrate Special Occasions* — Explore and experiment with various ways in which language is used across cultures, age groups, and genders to honour and celebrate people and events.

5.2.1 *Cooperate with Others* — Assist group members to maintain focus and complete tasks; identify and solve group process issues.

5.2.2 *Work in Groups* — Select and assume roles to assist in the achievement of group goals; engage in ongoing feedback.

5.2.3 *Use Language to Show Respect* — Demonstrate sensitivity to appropriate language use and tone when communicating orally.

5.2.4 *Evaluate Group Process* — Assess own contributions to group process, set personal goals for enhancing work with others, monitor group process using checklists, and set group goals.

Mathematics (Grade 6)

Statistics and Probability (SP)

SP-I.1.6 Formulate questions for possible investigations, given a context, and predict results.

SP-I.2.6 Identify appropriate data sources: first-hand, second-hand, and combination; select and defend the choice of an appropriate sample or population from which data are collected to answer a question.

SP-II.1.6 Select and use appropriate methods for collecting data, such as: designing and using structured questionnaires, conducting experiments, making observations, using electronic networks.

SP-II.2.6 Discuss how collected data are affected by the nature of the sample, the method of collection, the sample size, and biases.

SP-III.1.6 Analyze sets of data to make comparisons.

SP-III.2.6 Display data by hand or by computer in a variety of ways, including: histograms, double-bar graphs, stem-and-leaf-plots.

SP-IV.1.6 Read and interpret graphs, which are provided; describe the general distribution of data, using: smallest and largest value, frequency, value in the middle (median), patterns.

SP-IV.2.6 Make inferences to generate a conclusion about the data.

Number (N)

N-IV.1.6 Demonstrate and explain the meaning of ratio and the meaning of percentage, concretely, pictorially, and symbolically.

N-V.1.6 Estimate the solutions to calculations, and solve problems that involve addition and subtraction operations on decimals to thousandths.

N-V.2.6 Estimate the solutions to calculations, and solve problems that involve multiplication and division operations on decimals to thousandths (for calculations involving 2-digit whole number multipliers and divisors, the use of appropriate technology is expected).

N-V.5.6 Use a variety of methods to solve problems with multiple solutions.

Science (Grade 6)

Cluster 0: Overall Skills and Attitudes

6-0-1A Formulate specific questions that lead to investigations.

Include: Rephrase questions to a testable form, focus research questions.

6-0-1B Identify various methods for finding the answer to a specific question and select one to implement.

Examples: generating experimental data, accessing information from a variety of sources...

6-0-1C Identify practical problems to solve.

Examples: How can I make a hot-air balloon? Which type of light bulb should I buy?...

6-0-1D Identify various methods to solve a practical problem and select and justify one to implement.

Examples: constructing and testing a prototype, evaluating consumer products, accessing information from a variety of sources...

6-0-2A Access information using a variety of sources.

Examples: libraries, magazines, community resource people, outdoor experiences, videos, CD-ROMS, Internet...

6-0-2B Review information to determine its usefulness using pre-determined criteria.

6-0-2C Make notes on a topic, combining information from more than one source and reference sources appropriately.

6-0-3A Formulate a prediction/hypothesis that identifies a cause and effect relationship.

6-0-3B Identify variables that have an impact on their experiments and variables to hold constant to ensure a fair test.

6-0-3C Create a written plan to answer a specific question.

Include: apparatus, materials, safety considerations, steps to follow.

6-0-3D Develop criteria to evaluate a prototype or consumer product.

Include: function, aesthetics, efficient use of materials, cost, reliability.

6-0-3E Create a written plan to solve a problem.

Include: materials, safety considerations, labelled diagrams of top and side views, steps to follow.

6-0-4A Carry out procedures that comprise a fair test.

Include: controlling variables, repeating measurements to increase accuracy and reliability of results.

6-0-4B Construct a prototype.

6-0-4C Work cooperatively with group members to carry out a plan, and troubleshoot problems as they arise.

6-0-4D Assume various roles to achieve group goals.

6-0-4E Use tools and materials in a manner that ensures personal safety and the safety of others.

Include: keeping an uncluttered workspace, putting equipment away after its use, handling glassware with care.

6-0-5A Make observations that are relevant to a specific question.

6-0-5B Test a prototype or consumer product with respect to pre-determined criteria.

6-0-5C Select and use tools and instruments to observe, measure, and construct.

Examples: hand lens, telescope, binoculars...

6-0-5D Evaluate the appropriateness of units and measuring tools in practical contexts.

6-0-5E Estimate and measure accurately using SI and other standard units.

6-0-5F Record and organize observations in a variety of ways.

Examples: point-form notes, sentences, labelled diagrams, charts, ordered lists of data, frequency diagrams, spreadsheets...

6-0-6A Construct graphs to display data, and interpret and evaluate these and other graphs.

Examples: frequency tallies, histograms, double-bar graphs, stem-and-leaf plots...

6-0-6B Identify and suggest explanations for patterns and discrepancies in data.

6-0-6C Select and use tools and instruments to observe, measure, and construct.

Examples: hand lens, telescope, binoculars...

6-0-6D Identify and make improvements to a prototype and explain the rationale for the changes.

6-0-6E Evaluate the strengths and weaknesses of a consumer product based on pre-determined criteria.

6-0-6F Evaluate the methods used to answer a question or solve a problem.

6-0-7A Draw a conclusion that explains investigation results.

Include: explaining patterns in data, supporting or rejecting a prediction/hypothesis.

6-0-7B Base conclusions on evidence rather than preconceived ideas or hunches.

6-0-7C Identify a new prediction/hypothesis based on results of investigations.

6-0-7D Propose and justify a solution to the initial problem.

6-0-7E Identify new practical problems to solve.

6-0-7F Reflect on prior knowledge and experiences to construct new understanding and apply this new knowledge in other contexts.

6-0-7G Communicate methods, results, conclusions, and new knowledge in a variety of ways.

Examples: oral, written, multi-media presentations...

6-0-7H Identify connections between the investigation results and everyday life.

6-0-8A Recognize that science is a way of answering questions about the world and that there are questions that science cannot answer.

6-0-8B Identify examples of scientific knowledge that have developed as a result of the gradual accumulation of evidence.

6-0-8C Recognize that technology is a way of solving problems in response to human needs.

6-0-8D Provide examples of technologies from the past and describe how they have evolved over time.

6-0-8E Describe hobbies and careers related to science and technology.

6-0-8F Recognize that science is organized into specialized disciplines.

6-0-8G Describe positive and negative effects of scientific and technological endeavours.

Include: effects on themselves, society, the environment, and the economy.

6-0-9A Appreciate that women and men of diverse cultural backgrounds can contribute equally to science.

6-0-9B Show interest in the activities of individuals working in scientific and technological fields.

6-0-9C Demonstrate confidence in their ability to carry out investigations in science and technology.

6-0-9D Appreciate the importance of creativity, accuracy, honesty, and perseverance as scientific and technological habits of mind.

6-0-9E Be sensitive to and develop a sense of responsibility for the welfare of other humans, other living things, and the environment.

6-0-9F Frequently and thoughtfully evaluate the potential consequences of their actions.

Cluster 1: Diversity of Living Things

6-1-15 Identify and describe contributions of scientists and naturalists who have increased our understanding of the diversity of living things.

Cluster 3: Electricity

6-3-01 Use appropriate vocabulary related to their investigations of electricity.

Include: positive charge, negative charge, current electricity, static electricity, electrical circuit, insulator, conductor, switch, series circuit, parallel circuit, electromagnet, magnetic field, motor, generator, transformation, electrical energy, renewable, non-renewable, energy consumption.

6-3-02 Explain the attraction and repulsion of electrostatically charged materials.

Include: negatively and positively charged materials attract one another; materials of like charge repel one another.

6-3-03 Explain current electricity, and compare the characteristics of current and static electricity, by using a model.

6-3-04 Identify dangers associated with static and current electricity, and demonstrate and describe appropriate safety precautions.

6-3-05 List electrical devices used at home, at school, and in the community, and identify the human needs that they fulfill.

Examples: heat, light, communication, movement...

6-3-06 Develop a definition of an electrical circuit, based on classroom explorations.

Include: an electrical circuit is a continuous path for charges and must contain a power source and a conductor.

6-3-07 Experiment to classify a variety of materials as insulators or conductors.

6-3-08 Demonstrate and describe the function of switches in electrical circuits.

6-3-09 Construct and diagram simple series circuits and simple parallel circuits.

6-3-10 Explore to determine factors that affect bulb brightness in simple series and parallel circuits.

Include: number of bulbs, number of batteries, placement of bulbs and batteries.

6-3-11 Use the design process to construct an electrical circuit that performs a useful function.

Examples: doorbell, alarm, motorized toy, game...

6-3-12 Demonstrate, using a simple electromagnet constructed in class, that an electric current can create a magnetic field.

6-3-13 Explore motors and generators to determine that electromagnets transform electricity into motion, and motion into electricity.

6-3-14 Identify forms of energy that may result from the transformation of electrical energy, and recognize that energy can only be changed from one form into another, not created or destroyed.

Include: light, heat, sound, motion.

6-3-15 Identify the two major sources of electrical energy, and provide examples of each.

Include: chemical sources such as batteries; electromagnetic sources such as turbine motion caused by wind, falling water, and steam.

6-3-16 Identify renewable and non-renewable sources of electrical energy, and discuss advantages and disadvantages of each.

Examples: renewable sources such as hydroelectric, wind, geothermal, solar; non-renewable sources such as fossil fuels, nuclear fission...

6-3-17 Evaluate an electrical device using the design process.

Examples: light bulbs, kitchen appliances...

6-3-18 Describe factors that affect the consumption of electrical energy, and outline an action plan to reduce electrical energy consumption at home, at school, or in the community.

6-3-19 Describe ways in which electricity has had an impact on daily life.

Cluster 4: Exploring the Solar System

6-4-03 Identify Canadians who have contributed to space science or space technology, and describe their achievements.

Social Studies (Grade 6)

Grade 6: Canada: A Country of Change (1867 to Present)

GLO C: Citizenship

6-VC-004 Appreciate the benefits of living in Canada.

Examples: freedoms, education, health, safety...

GLO I: Identity, Culture, and Community

6-KI-011 Describe daily life on a prairie homestead between 1890 and 1914.

Examples: survey system, role of women, challenges facing early settlers, education...

6-KI-021 Identify various individuals from Canada's past and present, and describe their achievements.

GLO L: The Land: Places and People

6-KL-026 Describe the influence of the natural environment on life in Canada.

6-KL-026A Describe the influence of the land on their First Nation, Inuit, or Métis identity.

Examples: values, beliefs, traditions, customs, art, clothing...

6-VL-010 Appreciate the efforts of people in early Canada to overcome environmental hardships.

GLO E: Economics and Resources

6-KE-056 Relate stories of the Depression and describe its impact on Canada.

Examples: changes in agricultural practices, development of the social safety net, new political parties...

6-KE-057 Give examples of the impact of technological development on life in Canada from 1914 to 1945.

Examples: electricity, telecommunication, transportation, medicine, industrialization...

6-KE-058 Give examples of ways in which industry and technology have changed life in Canada since 1945.

Examples: urbanization, transportation, communication, education...

6-KE-059 Give examples of inventions and technologies created in Canada.

Examples: kayaks, snowmobiles, Canadarm, insulin, canola...

ICT Literacy Skills and Competencies for Middle Years
(Organized by Competency)

Basic Operating Skills

1.2.1 Select appropriate software to complete a defined task.

1.2.2 Select appropriate input and output devices or media, such as a mouse, scanner, touch screen, voice, joystick, video camera, track pad, and printer to complete a defined task.

1.2.3 Use appropriate keyboarding techniques.

1.2.4 Use an operating system to load software and conduct regular data management functions such as deleting, copying, moving, renaming, and grouping of files.

1.2.5 Use removable media such as CD-ROMs and cartridges, demonstrating proper handling, insertion, ejection, and accessing of data contained on the media.

1.2.6 Connect to networks and upload and/or download data to and from networks, including navigating the Internet.

1.2.7 Describe the compatibility issues related to the integration of various software programs and their files.

1.2.8 Solve information technology-related challenges and assist others to do so.

Communicating Electronically

3.2.3 Use telecommunications tools, such as email and desktop videoconferencing, for communication and participation in interactive projects with other learners.

3.2.4 Participate in electronic communities as learners, initiators, contributors, and mentors.

3.2.5 Accomplish tasks through collaboration facilitated by the appropriate use of information technologies, such as groupware products that function on local and wide area networks.

Concept Mapping

3.2.1 Use a variety of productivity tools to create documents that communicate effectively with a variety of audiences.

3.2.2 Publish and present documents in a variety of media, including hard copy, electronic projection, and the Internet.

Database Creation

4.2.4 Plan, create, edit, and evaluate databases with fields and layouts appropriate for the desired reports and specific purposes.

Educational Software

4.2.1 Solve subject-specific learning problems using a combination of information technologies.

Ethical Use of Technologies

5.2.1 Recognize and avoid gender, age, and cultural stereotypes of information technology users.

5.2.5 Recognize the value of privacy and intellectual property rights as they apply to information technology.

5.2.6 Cite sources of information and, where necessary, obtain permission to use the electronic representation of others' work.

5.2.7 Demonstrate responsible behaviour regarding privacy rights, piracy, dissemination of misinformation, and plagiarism when using information technology to complete tasks.

Graphics Creation

2.2.4 Create presentations using multimedia and integrated software packages for a variety of audiences.

3.2.1 Use a variety of productivity tools to create documents that communicate effectively with a variety of audiences.

3.2.2 Publish and present documents in a variety of media, including hard copy, electronic projection, and the Internet.

3.2.6 Use multimedia technology to create presentations appropriate for a given grade and a variety of audiences.

4.2.6 Use multimedia authoring tools to plan, create, and edit projects or reports that incorporate graphics, digital images, video, and sound.

Inquiry Using Electronic Sources

2.2.1 Acquire information from network, electronic, and online resources and databases in a variety of formats, such as text, audio, video, and graphics, while limiting extraneous data, and implement appropriate search and selection strategies, including Boolean, keyword, or natural language searches.

2.2.2 Analyze and evaluate information and data obtained from electronic sources by considering their currency, usefulness, and reliability.

3.2.4 Participate in electronic communities as learners, initiators, contributors, and mentors.

4.2.7 Examine projects or reports, created with the use of information technology, for reasonableness or relevance and accuracy.

Electronic Publishing

2.2.3 Plan for and produce a project or report by synthesizing information acquired from a variety of electronic and other resources.

2.2.4 Create presentations using multimedia and integrated software packages for a variety of audiences.

3.2.1 Use a variety of productivity tools to create documents that communicate effectively with a variety of audiences.

3.2.2 Publish and present documents in a variety of media, including hard copy, electronic projection, and the Internet.

3.2.6 Use multimedia technology to create presentations appropriate for a given grade and a variety of audiences.

4.2.5 Format projects and reports for publication by applying the principles and concepts associated with desktop publishing.

4.2.6 Use multimedia authoring tools to plan, create, and edit projects or reports that incorporate graphics, digital images, video, and sound.

Sound Recording

4.2.6 Use multimedia authoring tools to plan, create, and edit projects or reports that incorporate graphics, digital images, video, and sound.

Spreadsheet Analysis

4.2.3 Collect, manipulate, and analyze data by using a spreadsheet application and by writing formulas and functions and identifying various label types to chart and graph information.

Video Production

3.2.2 Publish and present documents in a variety of media, including hard copy, electronic projection, and the Internet.

3.2.6 Use multimedia technology to create presentations appropriate for a given grade and a variety of audiences.

4.2.6 Use multimedia authoring tools to plan, create, and edit projects or reports that incorporate graphics, digital images, video, and sound.

Web Page Authoring

2.2.5 Develop information resources available through an intranet or the Internet.

3.2.4 Participate in electronic communities as learners, initiators, contributors, and mentors.

4.2.5 Format projects and reports for publication by applying the principles and concepts associated with desktop publishing.

Word Processing

4.2.2 Plan, create, and edit projects and reports using a word processor.

Appendix C:
Index of Teaching and Learning Strategies and Tools

The following chart lists instructional and assessment strategies and tools suitable for Grade 6 students. Some of these are referred to in the *Inventions, Innovations, and Discoveries* interdisciplinary unit.

The strategies and tools can be found in the following Manitoba publications:

- Manitoba Education and Training. *Grades 5 to 8 English Language Arts: A Foundation for Implementation.* Winnipeg, MB: Manitoba Education and Training, 1998.
  (See English Language Arts Strategies That Make a Difference—Abbreviated as ELA Strategies)
- ---. *Success for All Learners: A Handbook on Differentiating Instruction: A Resource for Kindergarten to Senior 4 Schools.* Winnipeg, MB: Manitoba Education and Training, 1996. (Abbreviated as Success)

Teaching and Learning Strategies and Tools	Reference	
	ELA Strategies	**Success**
Active Listening	p. 8	p. 6.10
Admit Slips		p. 6.60
Analogy Graphic Organizer	p. 61	
Anticipation Guides	p. 142	p. 6.25; p. 6.98 (BLM)
Author/Illustrator Study	p. 221	
Before, During, and After Reading (BDA)	p. 146; BLM-17; BLM-74	
Big Six	p. 76	
Book Talks	p. 149	
Brainstorming	p. 12	
Charting the Patterns (Narrative and Expository Graphic Organizers)		pp. 6.41–6.44
Comparison and Contrast Frame		p. 6.51; p. 6.103 (BLM)
Concept Frame		p. 6.66; p. 6.111 (BLM)
Concept Organizers	p. 50	p. 6.65
Concept Overview		pp. 6.67–6.69; p. 6.112 (BLM)
Concept Relationship Frame		p. 6.53; p. 6.104 (BLM)
Co-op Co-op	p. 21	p. 5.8
Cornell Method	p. 116	
Corners	p. 22	
Cueing Bookmark		p. 7.8
Descriptive or Expository Paragraph Frame		p. 6.62
Dialectical Journals	p. 97	
Directed Listening-Thinking Activity (DLTA)	p. 122	
Directed Reading-Thinking Activity (DRTA)	p. 120	p. 6.48
Discussion		p. 7.3; p. 7.4
Drama	p. 42	
Editing		p. 6.81
Essay Patterns	p. 68	
Exit Slips		p. 6.60
Explanation Planner (Frame)		p. 6.62; p. 6.109 (BLM)
Expository Text Frames	p. 58	p. 6.62

(continued)

Teaching and Learning Strategies and Tools	Reference	
	ELA Strategies	**Success**
Fact-Based and Issue-Based Article Analysis	p. 71	p. 6.70; p. 6.71; p. 6.72; p. 6.114 (BLM); p. 6.115 (BLM)
Field Trips (Excursions)		pp. 9.4–9.8; p. 9.5
Five-Step Strategy for Revising and Editing	p. 226	
Focused Free-Write		p. 6.30
Framed Paragraphs	p. 65	
Frayer Plus Concept Builder		p. 6.66; p. 6.113 (BLM)
Gallery Walk	p. 202	p. 6.80
Graphic Organizers		pp. 6.41–6.44
Guided Reading for Middle Years	p. 124	
HASTE		p. 6.11
Herringbone/Fishbone	p. 63; p. 116	
IDEAL Problem-Solving Frame		p. 6.53; p. 6.105 (BLM)
Information Frame		p. 6.51
Inquiry Chart (I-Chart)	p. 83	
I-Search	p. 87	
Jigsaw	p. 22	p. 5.9
Journals	p. 94	
Knowledge Chart		p. 6.22; p. 6.23; p. 6.95 (BLM)
KWL/KWL Plus	p. 89; BLM-65; BLM-66	p. 6.20; p. 6.94 (BLM)
Lab Frame (Lab Report Outline)		p. 6.53; p. 6.106 (BLM)
LAPS Frames (Do Your LAPS Think Sheet)		p. 6.54; p. 6.108 (BLM)
Learning Log	p. 110	p. 6.56
Lesson Frame		p. 6.19; p. 6.93 (BLM)
LINK (List-Inquire-Note-Know)	p. 14	p. 6.27
Listen-Draw-Pair-Share		p. 6.22; p. 6.97 (BLM)
Listen-Sketch-Draft/Draw	p. 205	
Listen-Think-Pair-Share (Three-Minute Pause)		p. 6.13
Literature Circles	p. 125	
Logs	p. 110	
Mapping	p. 116	
Metacognitive Reflection	p. 293	
Mind Maps (Webs, Clusters)		p. 6.14; p. 6.24; p. 6.49; p. 6.83
Mini-Discussion		p. 7.4
Mnemonics		p. 6.86
Narrative Text Frames	p. 53	
Note Frames		p. 6.55
Note Making	p. 114	p. 6.82
Numbered-Heads Together		p. 7.4
Paragraph Frame		p. 6.62; p. 6.64; p. 6.110 (BLM)
Peer Conferencing (Peer Interview, Partner Interview)	p. 156	

(continued)

Teaching and Learning Strategies and Tools	Reference	
	ELA Strategies	**Success**
Personal Journals	p. 94	
Point of View (Reading from/Expressing Another Point of View)		pp. 6.73–6.76; p. 6.116 (BLM)
Portfolios (Assessment)		pp. 11.10–11.15
Process Notes	p. 116	p. 6.58
Question Circle	p. 35	
Questioning	p. 30	
RAFT (Role, Audience, Format, Topic)		pp. 6.77–6.79
Read on and Reread (and Reading Cue Card)	p. 193; BLM-83	
Readers Theatre	p. 42	
Reading Logs	p. 111	
Reading Workshop	p. 128	
Reciprocal Reading	p. 164	p. 6.46
Reciprocal Teaching	p. 166	p. 6.47
ReQuest (Reciprocal Questioning)	p. 167	p. 6.47
Retelling	p. 169; BLM-75	
Seven Teachings Activity		p. 4.18; p. 4.19
Seven-Step Knowledge Chart		p. 6.22; p. 6.96 (BLM)
Slim Jims	p. 116	
Sort and Predict	p. 214	p. 6.33; p. 6.35; p. 6.100 (BLM)
SQ3R	p. 179	p. 6.85
Staged Interviews		p. 6.76
Story Maps	p. 53; BLM-61, BLM-62, BLM-63	
Story Vine/Story Braid	p. 212	
Storyboards	p. 211	
Structured Notes	p. 117	
Talking Chips	p. 29	
Talking Circle/Talking Stick	p. 29	p. 7.5
T-Chart	p. 26; BLM-58	
Think-Aloud	p. 181; p. 288	
Think-Pair-Share/Think-Pair-Square	p. 15	
Three-Point Approach	p. 215	p. 6.36; p. 6.101(BLM)
Two Column Notes		p. 6.83
Venn Diagram	p. 64	
Word Cycle	p. 216	pp. 6.31–6.32; p. 6.99 (BLM)
Word Map	p. 216	
Word Splash (Picture Splash)		p. 6.28
Writer's Notebook	p. 240	
Writer's Workshop (Revision Record)	p. 241; BLM-84	
Writing Frames	p. 65	

Appendix D:
Blackline Masters (BLMs) and Teacher Blackline Masters (TBLMs)

In Appendix D, the Blackline Masters (BLMs) and Teacher Blackline Masters (TBLMs) are arranged in two ways:

- **BLMs and TBLMs Listed in Order of Appearance in the Interdisciplinary Unit:** Each BLM or TBLM is listed only once, in the section where it first appears.
- **BLMs and TBLMs Arranged by Category:** BLMs and TBLMs may appear in more than one category, if appropriate:
  - Assessment
  - Reference
  - Specific to *Inventions, Innovations, and Discoveries*
  - Science
  - Instructional
  - Organizational Forms/Logs

BLMs and TBLMs Listed in Order of Appearance

BLMs for Ongoing Learning Experiences (OLEs)

BLM OLE.1#1: Personal OLE Binder Maintenance Learning Centre
BLM OLE.1#2: Electronic OLE Binder Maintenance Learning Centre
BLM OLE.1#3: Personal OLE Binder Checklist
BLM OLE.1#4: Overview of Ongoing Learning Experiences (OLEs)
BLM OLE.3#1: Problem-Solving Learning Centre
BLM OLE.3#2: Problem-of-the-Week Chart
BLM OLE.4#1: Reading Circle Learning Centre
BLM OLE.4#2: Guess the Role
BLM OLE.4#3: Reading Circle Discussion Notes
BLM OLE.4#4: Reading Log
BLM OLE.4#5: Suggested Writing Topics for Reading Circle Response Log (Fiction)
BLM OLE.4#6: Reading Circle Response Log
BLM OLE.4#7: Rubric Template for Peer/Group and Self-Assessment of Reading Circle Discussion
BLM OLE.4#8: Retelling
BLM OLE.4#9: Student Self-Assessment for Responding to Literature
BLM OLE.4#10: Before, During, and After Reading Strategies: Self-Reflection
BLM OLE.5#1: Share the Learning Centre
BLM OLE.5#2: Share the Learning Journal
BLM OLE.5#3: Oral-Presentation Checklist
BLM OLE.5#4: A Viewer's Discussion Guide for Narrative and Informational Films/Videos
BLM OLE.6#1: Group Work Self-Reflection Log
BLM OLE.6#2: Collaborative Group Work Reflection Log
BLM OLE.6#3: Task Recording Sheet
BLM OLE.6#4: Set Your Goal
BLM OLE.6#5: We Reached Our Goal! Let's Review
BLM OLE.7#1: Speech Delivery Assessment Form
BLM OLE.7#2: Self-Assessment of Active Listening
BLM OLE.7#3: You Are the Pollster
BLM OLE.7#4: Book Talk
BLM OLE.7#5: Secretary's Report Form
BLM OLE.7#6: Chairperson's Agenda
BLM OLE.8#1: Reflection Journal Learning Centre
BLM OLE.8#2: What Have I Learned?
BLM OLE.8#3: Metacognitive Reflection
BLM OLE.8#4: Goal Setting
BLM OLE.9#1: Characteristics of Our Newspapers
BLM OLE.9#2: Newspaper Learning Centre
BLM OLE.9#3: 5Ws + H Chart
BLM OLE.10#1a: Sample Concept Map—Web
BLM OLE.10#1b: Sample Concept Map—Top-Down Tree
BLM OLE.10#2: Sample Outline Based on Concept Map—Web
BLM OLE.10#3: Electronic Collection Learning Centre
BLM OLE.10#4: Electronic Collection Checklist
BLM OLE.10#5: Creating an Electronic Portfolio
BLM OLE.10#6: Electronic Portfolio Checklist
BLM OLE.10#7: Electronic Portfolio: Peer Feedback

BLMs for Introductory Information and Communication Technology (ICT) Learning Experiences

BLM ICT.1#1: Overview of Introductory Information and Communication Technology (ICT) Learning Experiences
BLM ICT.1#2: Toolbox Binder Checklist
BLM ICT.1#3: Survey of Information and Communication Technology (ICT) Skills
BLM ICT.1#4: How Was Our Group Work?
BLM ICT.1#5: Group Work Reflection
BLM ICT.3#1: Planning Identity Clues
BLM ICT.4#1: Title/Cover Page Checklist
BLM ICT.5#1: Group Assessment of CD-ROM Poster
BLM ICT.5#2: Assessing the Technical Features of a CD-ROM
BLM ICT.6#1: Sample Title Page for Personal OLE Binder
BLM ICT.6#2: Sample Biography Web
BLM ICT.8#1: Planning My Inventor's Profile: Multimedia Presentation
BLM ICT.8#2: Presentation Storyboard
BLM ICT.9#1: Internet FAQs for Students
BLM ICT.9#2: Web Search Record
BLM ICT.11#1: Web Page Design: Observation Chart

BLMs for Module 1

BLM Mod.1.1#1: What on Earth?
BLM Mod.1.1#2: Group-Participation Checklist
BLM Mod.1.2#1: Overview of Inventions, Innovations, and Discoveries
BLM Mod.1.2#2: Solving Problems in Group Work
BLM Mod.1.3a#1: Sample Timeline of Discoveries
BLM Mod.1.3a#2: Peer Assessment of Oral Presentation: Terrific/Plus
BLM Mod.1.3a#3: Active Response Form
BLM Mod.1.3a#4: Recording Bibliographic Notes
BLM Mod.1.3a#5: Bibliography Checklist
BLM Mod.1.3a#6: The 5Ws + H of Discoveries
BLM Mod.1.3b#1: Why Do We Invent?
BLM Mod.1.3b#2: Categorizing Inventions
BLM Mod.1.3c#1: Compare and Contrast Frame

BLMs for Module 2

BLM Mod.2.1#1: 5Ws + H Guide
BLM Mod.2.1#2: Five-Step Revising and Editing Checklist
BLM Mod.2.2#1: Venn Diagram
BLM Mod.2.3#1: Rube Goldberg
BLM Mod.2.3#2: Explanatory Paragraph Checklist
BLM Mod.2.4#1: Peer Assessment of an Advertisement
BLM Mod.2.4#2: Advertisement Planning
BLM Mod.2.4#3: Useless Inventions Discussion List
BLM Mod.2.5#1: Sample Data-Collection Form

BLMs for Module 3

BLM Mod.3.1#1: Electrostatics Test
BLM Mod.3.3#1: Factors That Affect Bulb Brightness
BLM Mod.3.3#2: Insulator or Conductor?
BLM Mod.3.3#3: Checklist for Creating and Explaining Switches
BLM Mod.3.3#4: Experiment Report
BLM Mod.3.5#1: Changing One Form of Energy to Another
BLM Mod.3.5#2: The Effect of Closing Doors on Home Heating
BLM Mod.3.5#3: The Effect of Using a Fireplace on Home Heating
BLM Mod.3.5#4: Comparing Window and Wall Heat Loss
BLM Mod.3.5#5: Boiling Water with or without a Lid
BLM Mod.3.5#6: Bath Versus Shower

BLMs for Module 4

BLM Mod.4.1#1: Timeline for Developing Your Invention
BLM Mod.4.1#2: Inventor Logbook
BLM Mod.4.1#3: Patent Application
BLM Mod.4.1#4: Patent FAQs
BLM Mod.4.1#5: Patent Application Checklist
BLM Mod.4.1#6: Personal Goal Setting
BLM Mod.4.4#1: Invention Convention Planning Timeline
BLM Mod.4.5#1: Review Notes of Invention Convention
BLM Mod.4.5#2: Metacognitive Reflection on Invention Convention
BLM Mod.4.5#3: How Was My Group Work?

TBLMs for Ongoing Learning Experiences (OLEs)

TBLM OLE.2#1: Daily Edit Concept Chart
TBLM OLE.2#2: Using the Spell-Checker
TBLM OLE.3#1: Mental Math and Estimation
TBLM OLE.4#1: Roles of Group Members in Reading Circles
TBLM OLE.4#2: Variations for Reading Circles
TBLM OLE.4#3: Teacher Observation Checklist for Reading Circles
TBLM OLE.4#4: Response Assessment Checklist
TBLM OLE.4#5: Assessing Active Listening
TBLM OLE.5#1: Assessment Rubric for Oral Presentation
TBLM OLE.6#1: Group-Participation Observation Checklist
TBLM OLE.7#1: Speak Ye! Hear Ye! Roles
TBLM OLE.7#2: Speak Ye! Hear Ye! Teacher Assessment
TBLM OLE.7#3: Role-Selection Wheel
TBLM OLE.7#4: Observation Checklist for Speaking and Listening Skills
TBLM OLE.9#1: Suggested Activities to Familiarize Students with Newspapers
TBLM OLE.9#2: Newsworthiness
TBLM OLE.10#1: Suggestions for Organizing and Displaying Electronic Collections
TBLM OLE.10#2: Content and Structure of Electronic Collections

TBLMs for Introductory Information and Communication Technology (ICT) Learning Experiences

TBLM ICT.2#1: Skill Know-How Checklist
TBLM ICT.6#1: Concept-Mapping Skills Checklist
TBLM ICT.7#1: Resizing Images Using Adobe PhotoShop
TBLM ICT.7#2: Introductory Digital Camera Skills: Observation Checklist
TBLM ICT.9#1: "Internet 101" for Teachers
TBLM ICT.9#2: Acceptable Use of Copyrighted Electronic Resources
TBLM ICT.9#3: Sample URL Database
TBLM ICT.10#1: Questioning

TBLMs for Module 1

TBLM Mod.1.3a#1: Discovery Examples
TBLM Mod.1.3a#2: Making a Bibliography
TBLM Mod.1.3c#1: Checklist for Evaluating Information Sources
TBLM Mod.1.3c#2: Sample Chart for Inventions and Innovations

TBLMs for Module 2

TBLM Mod.2.2#1: Suggested Lead Statements to Discuss Personality Traits
TBLM Mod.2.2#2: Biographies and Autobiographies
TBLM Mod.2.2#3: Observation Checklist for Speaking and Listening Skills
TBLM Mod.2.4#1: Useless Inventions
TBLM Mod.2.4#2: Examples of Advertising Strategies
TBLM Mod.2.6#1: Steps for Developing a Survey
TBLM Mod.2.6#2: Variables That May Affect a Telephone Survey

TBLMs for Module 3

TBLM Mod.3.1#1: Conducting a Fair Test: Observation Checklist
TBLM Mod.3.3#1: Constructing a Prototype: Observation Checklist
TBLM Mod.3.3#2: Experiment Report: Assessment
TBLM Mod.3.5#1: Cooperative Group Learning: Teacher Assessment
TBLM Mod.3.5#2: Brief Facts on Energy Consumption
TBLM Mod.3.5#3: What Can You Do to Save Energy?

TBLMs for Module 4

TBLM Mod.4.1#1: Patent Certificate
TBLM Mod.4.4#1: Invention Convention Planning Committees
TBLM Mod.4.4#2: Invention Convention Press Release
TBLM Mod.4.4#3: Considerations for Participant Satisfaction Survey
TBLM Mod.4.4#4: Observations of Student Participation and Behaviour

BLMs and TBLMs Arranged by Category

Assessment

Student Self-Assessment/Reflection

BLM OLE.4#9: Student Self-Assessment for Responding to Literature
BLM OLE.6#1: Group Work Self-Reflection Log
BLM OLE.6#2: Collaborative Group Work Reflection Log
BLM OLE.6#5: We Reached Our Goal! Let's Review
BLM OLE.7#2: Self-Assessment of Active Listening
BLM OLE.8#2: What Have I Learned?
BLM OLE.8#3: Metacognitive Reflection
BLM OLE.8#4: Goal Setting
BLM Mod.4.1#6: Personal Goal Setting
BLM Mod.4.5#2: Metacognitive Reflection on Invention Convention

Peer/Group Assessment

BLM OLE.4#7: Rubric Template for Peer/Group and Self-Assessment of Reading Circle Discussion
BLM OLE.7#1: Speech Delivery Assessment Form
BLM OLE.10#7: Electronic Portfolio: Peer Feedback
BLM ICT.1#4: How Was Our Group Work?
BLM ICT.1#5: Group Work Reflection
BLM Mod.1.1#2: Group-Participation Checklist
BLM Mod.1.2#2: Solving Problems in Group Work
BLM Mod.1.3a#2: Peer Assessment of Oral Presentation: Terrific/Plus
BLM Mod.1.3a#3: Active Response Form
BLM Mod.2.4#1: Peer Assessment of an Advertisement
BLM Mod.4.5#3: How Was My Group Work?

Teacher Assessment

TBLM OLE.2#1: Daily Edit Concept Chart
TBLM OLE.4#3: Teacher Observation Checklist for Reading Circles
TBLM OLE.4#4: Response Assessment Checklist
TBLM OLE.4#5: Assessing Active Listening
TBLM OLE.5#1: Assessment Rubric for Oral Presentation
TBLM OLE.6#1: Group-Participation Observation Checklist
TBLM OLE.7#2: Speak Ye! Hear Ye! Teacher Assessment
TBLM OLE.7#4: Observation Checklist for Speaking and Listening Skills
TBLM ICT.2#1: Skill Know-How Checklist
TBLM ICT.6#1: Concept-Mapping Skills Checklist
TBLM Mod.1.3c#1: Checklist for Evaluating Information Sources
TBLM Mod.2.2#3: Observation Checklist for Speaking and Listening Skills
TBLM Mod.3.1#1: Conducting a Fair Test: Observation Checklist
TBLM Mod.3.3#1: Constructing a Prototype: Observation Checklist
TBLM Mod.3.3#2: Experiment Report: Assessment
TBLM Mod.3.5#1: Cooperative Group Learning: Teacher Assessment
TBLM Mod.4.4#4: Observations of Student Participation and Behaviour

Reference

Student

BLM OLE.4#5: Suggested Writing Topics for Reading Circle Response Log (Fiction)
BLM OLE.4#10: Before, During, and After Reading Strategies: Self-Reflection
BLM OLE.10#1a: Sample Concept Map—Web
BLM OLE.10#1b: Sample Concept Map—Top-Down Tree
BLM OLE.10#2: Sample Outline Based on Concept Map—Web
BLM OLE.10#5: Creating an Electronic Portfolio
BLM ICT.6#1: Sample Title Page for Personal OLE Binder
BLM ICT.6#2: Sample Biography Web
BLM ICT.9#1: Internet FAQs for Students
BLM Mod.4.1#3: Patent Application
BLM Mod.4.1#4: Patent FAQs

Teacher

TBLM OLE.2#2: Using the Spell-Checker
TBLM OLE.3#1: Mental Math and Estimation
TBLM OLE.4#1: Roles of Group Members in Reading Circles
TBLM OLE.4#2: Variations for Reading Circles
TBLM OLE.7#1: Speak Ye! Hear Ye! Roles
TBLM OLE.7#3: Role-Selection Wheel
TBLM OLE.9#1: Suggested Activities to Familiarize Students with Newspapers
TBLM OLE.9#2: Newsworthiness
TBLM OLE.10#1: Suggestions for Organizing and Displaying Electronic Collections
TBLM OLE.10#2: Content and Structure of Electronic Collections
TBLM ICT.7#1: Resizing Images Using Adobe PhotoShop
TBLM ICT.9#1: “Internet 101” for Teachers
TBLM ICT.9#2: Acceptable Use of Copyrighted Electronic Resources
TBLM ICT.10#1: Questioning
TBLM Mod.1.3a#1: Discovery Examples
TBLM Mod.1.3a#2: Making a Bibliography
TBLM Mod.1.3c#2: Sample Chart for Inventions and Innovations
TBLM Mod.2.2#1: Suggested Lead Statements to Discuss Personality Traits
TBLM Mod.2.2#2: Biographies and Autobiographies
TBLM Mod.2.4#1: Useless Inventions
TBLM Mod.2.4#2: Examples of Advertising Strategies
TBLM Mod.2.6#1: Steps for Developing a Survey
TBLM Mod.2.6#2: Variables That May Affect a Telephone Survey
TBLM Mod.4.4#3: Considerations for Participant Satisfaction Survey

Specific to Inventions, Innovations, and Discoveries

Student

BLM OLE.1#1: Personal OLE Binder Maintenance Learning Centre
BLM OLE.1#2: Electronic OLE Binder Maintenance Learning Centre
BLM OLE.1#3: Personal OLE Binder Checklist
BLM OLE.1#4: Overview of Ongoing Learning Experiences (OLEs)
BLM OLE.3#1: Problem-Solving Learning Centre
BLM OLE.4#1: Reading Circle Learning Centre

BLM OLE.4#2: Guess the Role
BLM OLE.4#3: Reading Circle Discussion Notes
BLM OLE.4#4: Reading Log
BLM OLE.4#5: Suggested Writing Topics for Reading Circle Response Log (Fiction)
BLM OLE.4#6: Reading Circle Response Log
BLM OLE.5#1: Share the Learning Centre
BLM OLE.5#2: Share the Learning Journal
BLM OLE.7#3: You are the Pollster
BLM OLE.7#4: Book Talk
BLM OLE.7#5: Secretary's Report Form
BLM OLE.7#6: Chairperson's Agenda
BLM OLE.8#1: Reflection Journal Learning Centre
BLM OLE.9#1: Characteristics of Our Newspapers
BLM OLE.9#2: Newspaper Learning Centre
BLM OLE.10#3: Electronic Collection Learning Centre
BLM ICT.1#1: Overview of Introductory Information and Communication Technology (ICT) Learning Experiences
BLM ICT.1#2: Toolbox Binder Checklist
BLM ICT.1#3: Survey of Information and Communication Technology (ICT) Skills
BLM ICT.3#1: Planning Identity Clues
BLM ICT.5#2: Assessing the Technical Features of a CD-ROM
BLM ICT.6#1: Sample Title Page for Personal OLE Binder
BLM ICT.6#2: Sample Biography Web
BLM ICT.8#1: Planning My Inventor's Profile: Multimedia Presentation
BLM ICT.8#2: Presentation Storyboard
BLM ICT.9#2: Web Search Record
BLM ICT.11#1: Web Page Design: Observation Chart
BLM Mod.1.1#1: What on Earth?
BLM Mod.1.2#1: Overview of Inventions, Innovations, and Discoveries
BLM Mod.1.3a#1: Sample Timeline of Discoveries
BLM Mod.1.3a#6: The 5Ws + H of Discoveries
BLM Mod.1.3b#1: Why Do We Invent?
BLM Mod.1.3b#2: Categorizing Inventions
BLM Mod.2.3#1: Rube Goldberg
BLM Mod.2.4#2: Advertisement Planning
BLM Mod.2.4#3: Useless Inventions Discussion List
BLM Mod.2.5#1: Sample Data-Collection Form
BLM Mod.4.1#1: Timeline for Development of Your Invention
BLM Mod.4.1#2: Inventor Logbook
BLM Mod.4.1#3: Patent Application
BLM Mod.4.1#4: Patent FAQs
BLM Mod.4.1#5: Patent Application Checklist
BLM Mod.4.4#1: Invention Convention Planning Timeline
BLM Mod.4.5#1: Review Notes of Invention Convention
BLM Mod.4.5#2: Metacognitive Reflection on Invention Convention

Teacher

TBLM Mod.4.1#1: Patent Certificate
TBLM Mod.4.4#1: Invention Convention Planning Committees
TBLM Mod.4.4#2: Invention Convention Press Release
TBLM Mod.4.4#3: Considerations for Participant Satisfaction Survey

Science

Student

BLM Mod.3.1#1: Electrostatics Test
BLM Mod.3.3#1: Factors That Affect Bulb Brightness
BLM Mod.3.3#2: Insulator or Conductor?
BLM Mod.3.3#3: Checklist for Creating and Explaining Switches
BLM Mod.3.3#4: Experiment Report
BLM Mod.3.5#1: Changing One Form of Energy to Another
BLM Mod.3.5#2: The Effect of Closing Doors on Home Heating
BLM Mod.3.5#3: The Effect of Using a Fireplace on Home Heating
BLM Mod.3.5#4: Comparing Window and Wall Heat Loss
BLM Mod.3.5#5: Boiling Water with or without a Lid
BLM Mod.3.5#6: Bath Versus Shower

Teacher

TBLM Mod.3.1#1: Conducting a Fair Test: Observation Checklist
TBLM Mod.3.3#1: Constructing a Prototype: Observation Checklist
TBLM Mod.3.3#2: Experiment Report: Assessment
TBLM Mod.3.5#1: Cooperative Group Learning: Teacher Assessment
TBLM Mod.3.5#2: Brief Facts on Energy Consumption
TBLM Mod.3.5#3: What Can You Do to Save Energy?

Instructional

BLM OLE.4#8: Retelling
BLM OLE.5#4: A Viewer's Discussion Guide for Narrative and Informational Films/Videos
BLM OLE.9#3: 5Ws + H Chart
BLM Mod.1.3a#4: Recording Bibliographical Notes
BLM Mod.1.3a#5: Bibliography Checklist
BLM Mod.1.3c#1: Compare and Contrast Frame
BLM Mod.2.1#1: 5Ws + H Guide
BLM Mod.2.2#1: Venn Diagram

Organizational Forms/Logs

Student

BLM OLE.1#3: Personal OLE Binder Checklist
BLM OLE.3#2: Problem-of-the-Week Chart
BLM OLE.4#4: Reading Log
BLM OLE.4#6: Reading Circle Response Log
BLM OLE.5#3: Oral-Presentation Checklist
BLM OLE.6#3: Task Recording Sheet
BLM OLE.6#4: Set Your Goal
BLM OLE.10#4: Electronic Collection Checklist
BLM OLE.10#6: Electronic Portfolio Checklist
BLM ICT.1#2: Toolbox Binder Checklist
BLM ICT.4#1: Title/Cover Page Checklist
BLM ICT.5#1: Group Assessment of CD-ROM Poster
BLM Mod.1.3a#5: Bibliography Checklist
BLM Mod.2.1#2: Five-Step Revising and Editing Checklist

BLM Mod.2.3#2: Explanatory Paragraph Checklist
BLM Mod.2.5#1: Sample Data-Collection Form
BLM Mod.3.3#3: Checklist for Creating and Explaining Switches
BLM Mod.3.3#4: Experiment Report
BLM Mod.4.1#2: Inventor Logbook
BLM Mod.4.1#3: Patent Application
BLM Mod.4.1#5: Patent Application Checklist
BLM Mod.4.5#1: Review Notes of Invention Convention

Teacher

TBLM ICT.7#2: Introductory Digital Camera Skills: Observation Checklist

Appendix E:
Glossary of Acronyms, Terms, and Abbreviations

BLM Blackline Master. These sheets are intended for student use. Most are reproducible.

ELA English Language Arts.

GLO General Learning Outcome, as used in the subject areas of English language arts, mathematics, science, and social studies.

ICT Information and Communication Technologies. The ICT Learning Experiences section is intended to help students acquire ICT skills that they will use throughout the *Inventions, Innovations, and Discoveries* interdisciplinary unit.

IMYM Interdisciplinary Middle Years Multimedia Project.

IMYM6 *Inventions, Innovations, and Discoveries* (Grade 6 interdisciplinary unit)

LE Learning Experience. Each "lesson" of the *Inventions, Innovations, and Discoveries* interdisciplinary unit is called an LE.

MLA Modern Language Association. The MLA style is used in this unit to document and cite bibliographic information.

Mod. Module. There are four modules in *Inventions, Innovations, and Discoveries.*

OLE Ongoing Learning Experience. The OLEs are intended for use throughout the interdisciplinary unit, before it is begun, and after it is completed. OLEs provide frameworks for learning basic skills and competencies and for developing effective personal and collaborative work habits.

SLO Specific Learning Outcome, as used in the curricular areas of ELA, mathematics, science, and social studies.

TBLM Teacher Blackline Master. The TBLM sheets are intended for teacher use. Most are reproducible.

URL Uniform Resource Locator. A URL is a system of symbols and abbreviations put together to form the Internet address of a website.