Then and Now: Advances in Computer Technology   Mod.1.3c

TIME
180 minutes

OVERVIEW
Students explore the concept of "innovation." They investigate the invention of the computer, from the first mainframe to the latest wireless palm computer, and note the changes and improvements (innovations) that have been made to that invention over time.

LEARNING OUTCOMES
Through this learning experience (LE), students will achieve specific learning outcomes (SLOs) in various subject areas. Consider the intent of this LE and your choice of instructional and assessment strategies to determine which SLOs students may achieve, in addition to those identified.

English Language Arts
Consider the intent of this LE and your choice of instructional and assessment strategies to determine which SLOs students may achieve, in addition to those identified below:

- 2.1.1 *Prior Knowledge* — Seek connections between previous experiences, prior knowledge, and a variety of texts.
- 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.
- 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…].
- 3.2.5 *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.
- 3.3.4 *Develop New Understanding* — Relate gathered information to prior knowledge to reach conclusions or develop points of view; establish goals for developing further inquiry or research skills.
- 4.2.4 *Enhance Artistry* — Choose language, sounds, and images [including transitional devices] to enhance meaning and emphasis.

Science
Consider the intent of this LE and your choice of instructional and assessment strategies to determine which SLOs students may achieve, in addition to those identified below:

- SLOs related to Scientific Inquiry or the Design Process in Cluster 0: Overall Skills and Attitudes.

Social Studies
Consider the intent of this LE and your choice of instructional and assessment strategies to determine which SLOs students may achieve, in addition to those identified below:
- 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...

ICT LITERACY SKILLS AND COMPETENCIES
Consider the intent of this LE and your choice of instructional and assessment strategies to determine which skills and competencies students may achieve, in addition to those identified below:
- basic operating skills
- inquiry, using electronic sources
- word processing

SUGGESTED LEARNING RESOURCES
Software
- word processor

Internet
- IMYM Links Database: <http://www.edu.gov.mb.ca/ks4/tech/imym/resources/links.html>
- Search the Internet using the term "computer history."

CD-ROM
- electronic encyclopedia

Print
- Selected Bibliography
- Appendix C: Index of Teaching and Learning Strategies and Tools
- Manitoba Education and Training. *Grades 5 to 8 English Language Arts: A Foundation for Implementation.* Winnipeg, MB: Manitoba Education and Training, 1998. (See Wall Chart: Questions for Evaluating the Usefulness of Information, Grade 6, 212.)

BLMs
- BLM Mod.1.3a#1: Sample Timeline of Discoveries
- BLM Mod.1.3c#1: Compare and Contrast Frame

TBLMs
- TBLM OLE.2#1: Daily Edit Concept Chart
- TBLM Mod.1.3c#1: Checklist for Evaluating Information Sources
- TBLM Mod.1.3c#2: Sample Chart for Inventions and Innovations

Materials
- class Timeline of Discoveries chart and Picture Splash, developed in Mod.1.3a: Back to the Future: A Timeline of Discoveries

SUGGESTIONS FOR INSTRUCTION

Preparation and Set-up
- Gather resources showing and describing different models of computers over the years.
- Make and post a Wall Chart: Questions for Evaluating the Usefulness of Information (see Suggested Learning Resources).
- Add a section for computers to the class Timeline of Discoveries chart developed in Mod.1.3a: Back to the Future: A Timeline of Discoveries (see BLM Mod.1.3a#1: Sample Timeline of Discoveries).

Activating Strategies
- **Note:** Teach concepts such as discoveries, inventions, and innovations separately to facilitate clearer understanding. Start with discoveries and proceed in a similar fashion on consecutive days for inventions and innovations.
- As a class, brainstorm inventions from years ago that are still in use today. Refer to the class Timeline of Discoveries chart made in Mod.1.3a: Back to the Future: A Timeline of Discoveries. Examples could include: refrigerators, stoves, telephones, radios, or lamps. How can these inventions still be in use today? They have evolved to meet our needs and they are better supported by the technology and the resources around us.
- Students look up the meaning of "innovations" in their dictionaries. Can they infer the meaning of "innovation" as it relates to "inventions"? To brainstorm innovations brought to modern inventions, use TBLM Mod.1.3c#2: Sample Chart for Inventions and Innovations or the list made with BLM Mod.1.3b#1: Why Do We Invent?
- Discuss how innovations have made these modern inventions easier to use and better suited to our present-day lifestyle.
- Introduce an early computer such as ENIAC (Electronic Numerator Integrator Analyzer and Computer) by reading an article on that topic from an electronic encyclopedia or a website. Use a computer and a projection system to enable students to view the text while you read it.

Acquiring Strategies
- Students use resources gathered for this LE, including websites, to find more information about early forms of computers.
- Each student chooses one early version or model of computer as well as a current model to research and compare.
- Review the Wall Chart: Questions for Evaluating the Usefulness of Information with students. They take notes on each of their chosen models of computers. Some categories to consider are: size, speed, operation, cost, availability, appearance, memory, use, special features, and date of creation.

Applying Strategies
- Using BLM Mod.1.3c#1: Compare and Contrast Frame, students record information about how their chosen computers are alike and different, using data from several categories. They write a statement to compare and contrast the two.

Variations/Extensions
- Instead of researching computers, students research one of the inventions they brainstormed at the beginning of this LE.
- Students research inventions of First Nations and Inuit peoples, such as toboggans, canoes, kayaks, and snowshoes. They discuss innovations made after the items were invented (e.g., canoes can be made of aluminium) and describe their use today.

- Use the information gathered by the students to make a timeline of computer history, or include the data collected on the Timeline of Discoveries created in Mod.1.3a: Back to the Future: A Timeline of Discoveries, as a separate entry.
- Using a word processor, students write a text discussing whether people believe they are any happier today than they were 20 years ago because of the improvements in communication technology (e.g., computers, cell phones, answering machines). Find opinions on the Internet to support the text.

SUGGESTIONS FOR ASSESSMENT
- Read students' responses to BLM Mod.1.3c#1: Compare and Contrast Frame. Were they able to make a statement to compare and contrast their two chosen computers, based on the information they had found?
- Observe students as they search for information. Refer to a checklist such as TBLM Mod.1.3c#1: Checklist for Evaluating Information Sources.

CONNECTION TO INVENTION CONVENTION
- Through their interviews and investigations, students become aware that an invention meets a need. As they investigate and assess the needs of people through this interdisciplinary unit, they gain a deeper understanding that will help them in creating their own useful inventions.

BLM Mod.1.3c#1: Compare and Contrast Frame

Name _____   Date _____

Compare and contrast two terms, concepts, or events.

	How are and **alike?**
C O M P A R E	

	How are and **different?**
C O N T R A S T	

Write a statement to compare and contrast the two terms, concepts, or events.

Compare and Contrast Frame: Used by permission of Lynda Matchullis and Bette Mueller, Prairie Spirit School Division.

TBLM Mod.1.3c#1: Checklist for Evaluating Information Sources

Topic _____   Date _____

Evaluating Information Sources	Student Names																				
The student																					
• uses pre-established criteria to evaluate information sources																					
• self-questions to determine appropriateness of sources																					
• discards inappropriate sources																					
• differentiates between suitable and unsuitable information																					
• recognizes that information serves different purposes																					

Checklist for Evaluating Information Sources: Adapted from *Grades 5 to 8 English Language Arts: A Foundation for Implementation* (Manitoba Education and Training, Grade 6, 213).

TBLM Mod.1.3c#2: Sample Chart for Inventions and Innovations

Name _____   Date _____

Predecessor	Invention	Innovation
Outhouse	Indoor plumbing	Water-saving toilet
Moccasins	Snowshoes	Snowshoes of different shapes for different types of snow
Manual typewriter	Electric typewriter	Self-correction tape
Wood-burning stove	Electric stove and oven	Self-cleaning oven
Ice box	Electric refrigerator and freezer	Self-defrosting freezer
Blade razor	Disposable razor	Twin-blade and triple-blade razor