#### Mod.4.1

# Design Your Own Invention OR Build a Better...

### TIME

300 (5 x 60) minutes

### OVERVIEW

Students design and build their own invention, based on a "need" they have identified that could fulfill a specific "want," or they improve on a current invention (innovation).

**Note:** The learning experiences in Mod.4.2: Design a Logo/Business Card and Mod.4.3: Promotion can be started while students continue to build the final version of their invention in Mod.4.1: Design Your Own Invention OR Build a Better...

# 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:

- 2.3.5 *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.
- 3.1.1 Use Personal Knowledge Summarize and focus personal knowledge of a topic to determine information needs.
- 3.1.4 *Create and Follow a Plan* Create and follow a plan to collect and record information within a pre-established time frame.
- 3.3.2 *Record Information* Make notes on a topic, combining information from more than one source; reference sources appropriately.
- 4.2.5 *Enhance Presentation* Prepare detailed and organized compositions, presentations, reports, and inquiry or research projects using templates or pre-established organizers.

# 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.

### 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
- concept mapping

- graphics creation
- spreadsheet analysis
- word processing

# SUGGESTED LEARNING RESOURCES Software

- concept mapping
- word processor
- graphics
- spreadsheet

### Internet

IMYM Links Database: <<u>http://www.edu.gov.mb.ca/ks4/tech/imym/resources/links.html</u>>

# Print

- 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 Desk-O-Matic, Grade 5, 162.)

### BLMs

- 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

### TBLM

• TBLM Mod.4.1#1: Patent Certificate

#### SUGGESTIONS FOR INSTRUCTION Preparation and Set-up

- Post the list of needs that have been brainstormed so far throughout this interdisciplinary unit.
- Provide students with several copies of BLM Mod.4.1#2: Inventor Logbook for their use.
- Make copies of Desk-O-Matic for each student (see Print in Suggested Learning Resources).

# **Activating Strategies**

- Give copies of Desk-O-Matic to students. In Think-Pair-Share groups, students discuss the invention described on the handout.
- Students review the list of needs that have been identified throughout this interdisciplinary unit (see survey results from Mod.2.6: Customer Service Department).
- Students brainstorm and list any additional needs, based on their own wants.
- Students review and discuss each suggestion on the list, considering feasibility, safety, cost efficiency of production, availability of materials, and so on, and cross out unsuitable or unachievable suggestions. Explain that students will have to provide their own supplies as they build their own invention.

- Give each student a copy of BLM Mod.4.1#4: Patent FAQs. Clarify concepts addressed in the questions and answers regarding patents. Explain that students are expected to file a patent for their invention.
- Each student chooses an invention to develop or to improve and fills out BLM Mod.4.1#1: Timeline for Developing Your Invention. Students can use the BLM as a template to set up a timeline, using spreadsheet or concept-mapping software.
- Explain that throughout the invention process, each student keeps an Inventor Logbook. Review and explain the content of BLM Mod.4.1#2: Inventor Logbook.
- Students draw a plan/blueprint for their invention. Students can use graphics software to create their plan/blueprint, which should include descriptions of parts of the invention and their purpose, as well as measurements. Students confer with peers and the teacher to review their plan/blueprint and make modifications.
- As an alternative way to assess goals and involvement in the task at hand, ask students to complete BLM Mod.4.1#6: Personal Goal Setting.

# **Applying Strategies**

- Students build a prototype of their invention. Emphasize the importance of keeping accurate daily logs, and remind students to
  - include drawings of their invention from different angles, noting any changes
  - provide accurate measurements, ensuring that the drawings are made to scale
- Students form test teams. They test each other's prototype and make improvements based on observations of performance or suggestions from team members.
- Students build the final version of their invention.
- Students complete BLM Mod.4.1#3: Patent Application and file a formal Application for Grant of a Patent for their invention.
- Students fill out BLM Mod.4.1#5: Patent Application Checklist and submit it to the teacher, along with their completed BLM Mod.4.1#3: Patent Application.
- As Commissioner of Patents, prepare a duly signed Patent Certificate for the successful student applicant (see TBLM Mod.4.1#1: Patent Certificate).

# SUGGESTIONS FOR ASSESSMENT

- Review students' BLM Mod.4.1#1: Timeline for Developing Your Invention. Confer with students about realistic expectations and goal achievement.
- Review students' BLM Mod.4.1#2: Inventor Logbook and take note of their progress.
- Observe each student's level of
  - participation within the test team
  - commitment in the invention development process
- Review BLM Mod.4.1#5: Patent Application Checklist to ensure each student's application is complete. Comment on the application contents in the space provided.

# BLM Mod.4.1#1: Timeline for Developing Your Invention

Name

Create a plan for designing and building your invention. Set a specific goal for each day, describing what outcome will be achieved by the end of the day. Keep in mind that if a goal is not achieved, your timeline will become inaccurate. Set realistic goals for yourself, based on what the class has discussed during the *Inventions, Innovations, and Discoveries* interdisciplinary unit, and the time it has taken to achieve other goals and complete other projects so far.

#### Invention

Goals for Designing and Building Invention				
Day 1 Goal				
Day 2 Goal				
Day 3 Goal				
Day 4 Goal				
Day 5 Goal				
Day 6 Goal				
Day 7 Goal				
Day 8 Goal: Final Invention Product				

# BLM Mod.4.1#2: Inventor Logbook

Complete as many categories as apply to today's work.

Name			Date	Day #
My goal to achieve today:				
Am I on schedule?	Yes	No	Draw proto	type adjustments.
Ideas for improvement:				
Testing:				
Suggestions from test team:				
What I achieved today:				
Goals for next day:				
What needs to be done to achie	ve my se	t goal:		

Witness \_\_\_\_\_ Date \_\_\_\_\_

# BLM Mod.4.1#3: Patent Application

Application for Grant of a Patent					
The applicant					
requests the grant of a patent for an invention entitled					
which is described and claimed in the accompanying specification.					
Declaration					
<ul> <li>I do not know and do not believe that the invention was ever known or used in Canada before I invented it.</li> </ul>					
<ul> <li>I do not know and do not believe that the invention was ever patented or described in any book, magazine, newspaper, or on the Internet in any country before I invented it.</li> <li>I am the sole inventor.</li> </ul>					
I own the whole interest of the invention.					
Name of Inventor					
School Name					
School Address					
Name of Teacher					
Signature of Inventor					
Date of Application					

# BLM Mod.4.1#4: Patent FAQs

For definitions of terms used in the following questions and answers, refer to the Canadian Intellectual Property Office (CIPO) website at: <<u>http://strategis.ic.gc.ca/sc\_mrksv/cipo/patents/e-filing/gloss.htm</u>>.

### Q. What is the difference between copyright and a patent?

A. The Canadian Intellectual Property Office website defines the terms as follows:

**Copyright:** "legal protection for literary, artistic, dramatic, or musical works, computer programs, performer's performances, sound recordings and communication signals." (CIPO, Glossary: <<u>http://strategis.ic.gc.ca/sc\_mrksv/cipo/patents/e-filing/gloss.htm</u>>)

**Patents:** "Patents are government grants that give inventors exclusive rights to their inventions. Patent protection applies in the country that issues the patent... Patents are granted for products or processes that are new, workable and ingenious (novel, useful and inventive). In this way, patents serve as a reward for ingenuity...

In Canada, a patent is given to the inventor who first files an application. It's therefore wise to file as soon as possible after completing your invention because someone else may be on the same track."

(CIPO, Frequently Asked Questions: <<u>http://strategis.gc.ca/sc\_mrksv/cipo/patents/faq\_pt-e.html</u>>)

### Q. Why obtain a patent?

**A.** If you do not have a patent, you can protect your invention only if you do not share it in public. The moment that you show your invention to anyone else, you run the risk that this person can use it without your consent, market it, and claim rights to it by obtaining a patent.

### Q. Who can apply for a patent?

**A.** The legal owner of an invention can obtain the patent. Usually, the owner is the person who invented something.

### Q. How long does it take to obtain a patent?

A. It may take up to three years.

### Q. How long is a patent effective?

**A.** In Canada, the "life" of a patent is 20 years from the date the application was first filed. During that time, the invention is protected from being copied. A fee must be paid yearly to keep it in force.

### Q. Are patent laws the same around the world?

A. Patent laws are national and can differ from one country to another. When applying for a patent in Canada, ensure that you read and understand Canadian patent information and laws.

### Q. Where is my patent protected?

**A.** A patent obtained in Canada protects your invention in Canada. To be protected in other countries, you must also file a patent application in each country in which you want protection.

(continued)

### Q. What happens if an invention with a patent is copied?

**A.** The owner of the patent can claim rights infringement and ask for compensation. A famous example is the sewing machine.

Elias Howe (1819-1867), an American, invented a sewing machine and was granted a patent in 1846. Isaac Merrit Singer (1811-1875), also an American, invented a continuousstitch sewing machine in 1851. Others also made copies of Howe's invention. After much time in courts of law, it was determined in 1854 that Howe was the rightful inventor of the sewing machine. By the time his patent expired in 1867, he had made about \$2,000,000 from his invention.

However, Singer's greatest "invention" was the marketing of his sewing machine. He started a company that became world famous. To this day, the Singer name is most widely associated with the invention of the sewing machine.

### Q. How do I know whether a patent for my invention already exists?

**A.** While you may think that your invention is original, it may, in fact, have been invented and patented by someone before you. By doing a preliminary search, you may determine that there is another invention like yours already patented, thereby saving yourself time and money.

### Q. What needs to be included in a patent application?

- **A.** The following documents must be included in a patent application:
  - a petition or application
  - a detailed description of the invention
  - an abstract, which is a brief summary of your invention
  - a claim, which determines exactly what part(s) or aspect(s) of your invention, or how much of your invention, the patent will protect. If the invention uses objects already invented, the claim can only include the original or new aspects.
  - any drawing referred to in the description
  - a filing fee

# BLM Mod.4.1#5: Patent Application Checklist

Name Date				
Contents of Patent Application	Student ✓	Teacher ✓		
Petition or application is completed.				
Dated:				
The application includes				
a detailed description of the invention, including its purpose, the needs it fulfills, and its use				
an abstract, or a brief summary of the invention (two or three sentences)				
a claim that explains which aspects of the invention are to be protected with the patent				
all drawings portraying the invention from different angles and labelled accordingly				
Teacher Comments				

# BLM Mod.4.1#6: Personal Goal Setting

Name

My goal is:	
, ,	
The steps I need to take to reach my goal:	
•	
•	
•	
•	
The recourse I need to use to eship a much	
The resources I need to use to achieve my go	bai (who and what).
•	
•	
Starting Date:	Completion Date:
Outcome:	
Next step:	
Date:	Signature:

**Personal Goal Setting:** Reproduced from Grades *5 to 8 English Language Arts* (Manitoba Education and Training BLM-46).

### TBLM Mod.4.1#1: Patent Certificate

(Name of Inventor) (Name of Invention) Whereas an application for a new and useful invention has been received and Whereas application requirements have been complied with Therefore this patent grants to the person named above, having title to the invention named above, the right to exclude others from making, using, or selling this invention for the term of the patent. This \_\_\_\_\_ in the year \_\_\_\_\_ (Commissioner of Patents)