Tally-Ho   **Mod.2.5**

TIME
120 minutes (2 x 60)

OVERVIEW
Students tally the electrical and non-electrical inventions they use in their own homes. They use this list to create a double-bar graph using a spreadsheet.

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:
- 3.1.2 *Ask Questions* — Formulate relevant questions to focus information needs for an inquiry.
- 3.1.4 *Create and Follow a Plan* — Create and follow a plan to collect and record information within a pre-established time frame.
- 3.3.1 *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...].
- 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.

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

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.
- 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...
- 6-3-18 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.

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-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-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
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
- communicating electronically
- electronic publishing
- spreadsheet analysis

SUGGESTED LEARNING RESOURCES
Software
- spreadsheet
- email
- web page authoring
- concept mapping

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 Questioning, in Strategies That Make a Difference, 30-36.)

BLM
- BLM Mod.2.5#1: Sample Data-Collection Form

SUGGESTIONS FOR INSTRUCTION
Activating Strategies
- In collaborative groups, students brainstorm a list of electrical and non-electrical inventions they use daily at school.
- How can these inventions be categorized? (For example, an invention can be used for learning, for playing, for cleaning, in the classroom, in the hallway, in the office, in the library.)
- Students consider electrical and non-electrical inventions in their homes. They predict and hypothesize, answering the following questions:
  — Which electrical and non-electrical inventions do you use most? Why?
  — What room of your home contains the most electrical inventions? Why?
  — What room of your home contains the most non-electrical inventions? Why?
- Each group uses concept-mapping software to report its findings.

Acquiring Strategies
- Students discuss ways in which inventions are an integral part of their lives and what needs they fulfill (e.g., provide light, warmth, protection, facilitate communication).
- As a class, discuss how inventions for the home can be categorized. Based on categories they identified, students formulate a guiding question (see ICT.10#1: Questioning) and design a form for collecting data from their homes (see BLM Mod.2.5#1: Sample Data-Collection Form for an example).
- Ask students to agree to a number (e.g., five for each room tallied) for reporting on the inventions **they** use most often, or assign a number.

Applying Strategies
- In collaborative groups, students tally the information on each of their data-collection forms, using a common form such as BLM Mod.2.5#1: Sample Data-Collection Form.
- Using a spreadsheet, students record their collected data and construct a double-bar graph. (Proper labelling of the graph is essential.) They
  — present the tallied information to the whole class
  — display the resulting graphs in the classroom
  — post the graphs on the class website
- Students interpret and compare the general distribution of the class data according to the following criteria:
  — invention used most overall (all rooms combined)
  — invention used most for each room
  — non-electrical inventions that also have an electrical version (e.g., toothbrush, screwdriver)
- Students make inferences to generate a conclusion about the data.

Variations/Extensions
- Students email their key pals from another class (see ICT.3: Riddle This) about their data collection. They collect data from their key pals or ask them to collect their own. Both classes compare data collected and discuss the similarities. They list the variables that might explain differences (e.g., the nature of the sample, the collection method, the sample size, biases).

- Students invite responses to the website posting of their data collection. They discuss results and variables with respondents.
- Using records of their conversations with parents, grandparents, Elders, and other members of the community (see Mod.1.3b#1: Why Do We Invent?), students fill out BLM Mod.2.5#1: Sample Data-Collection Form. Using BLM Mod.2.2#1: Venn Diagram, students compare inventions of long ago with inventions they use today.

SUGGESTIONS FOR ASSESSMENT

- Check students' BLM Mod.2.5#1: Sample Data-Collection Form to determine whether students have entered data in appropriate categories and whether they have enough data to create a valid double-bar graph.
- Note whether students explain appropriately how they did their survey.
- Check the accuracy of students' double-bar graphs, assessing how they created, labelled, and interpreted them.
- Confer with students to determine whether they make appropriate inferences and draw valid conclusions about the data they collected.

CONNECTION TO INVENTION CONVENTION

- Students become aware of the kinds of inventions they use most in their daily lives at home and at school. This helps them plan for a kind of invention to consider for the Invention Convention.

BLM Mod.2.5#1: Sample Data-Collection Form

Group Members

_____   _____

_____   _____

_____   _____

Use this form to tally the inventions used most in your homes.

Your Bedroom	
Non-Electrical	**Electrical**

Bathroom	
Non-Electrical	**Electrical**

Kitchen/Dining Room	
Non-Electrical	**Electrical**

Family Room/Living Room	
Non-Electrical	**Electrical**

Basement/Storage Area	
Non-Electrical	**Electrical**

Garage (If Applicable)	
Non-Electrical	**Electrical**