Customer Service Department   **Mod.2.6**

TIME
120 minutes (2 x 60)

OVERVIEW
Students learn to design and conduct a survey. They design a survey to verify the needs and complaints of a selected group of people, which could be satisfied by creating an invention or improving on one (innovation).

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

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
- spreadsheet analysis
- word processing

SUGGESTED LEARNING RESOURCES

Software

- word processing
- spreadsheet
- email

Internet

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

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.)

Materials

- magazines

TBLMs

- TBLM ICT.10#1: Questioning
- TBLM Mod.2.6#1: Steps for Developing a Survey
- TBLM Mod.2.6#2: Variables That May Affect a Telephone Survey

SUGGESTIONS FOR INSTRUCTION

Preparation and Set-up

- Ask students to bring magazines from home.

Activating Strategies

- Lead a class discussion.
    - Have students ever been surveyed by telephone solicitors?
    - Have they ever been stopped by a survey taker while shopping with a parent?
    - Can they describe the type of questions being asked in the survey(s)?
- Students scan magazines to find surveys. As a class, examine the survey questions and the choices given for answers.
    - What is the most common form or type of questions found on a survey?
    - Which are the easiest to answer? Why?
- Review contents of TBLM ICT.10#1: Questioning.
- Review and explain the specific contents for surveys, as outlined in TBLM Mod.2.6#1: Steps for Developing a Survey, and give students a copy of the outlined steps.
- Discuss how variables affect data collection (see TBLM Mod.2.6#2: Variables That May Affect a Telephone Survey for an example). As a class, brainstorm for a list of variables

related to a variety of activities such as cleaning (e.g., Who does the cleaning? What needs to be cleaned?), using computers (e.g., Who uses the computer? What use is made of the computer? When is it used?), and so on. Record students' suggestions using a computer and a projection system.

Acquiring Strategies
- In collaborative groups, students brainstorm to determine categories of activities and/or things that might elicit complaints from customers (e.g., activities: cleaning, cooking, driving; things: an appliance, a tool, a game).
- Each collaborative group identifies an activity in which customers might participate and/or a problem that customers might experience with the activity. Students discuss and agree on a prediction statement related to the activity/problem (e.g., "I think that if the customers spent less time washing dishes, they would have more time to watch television.").
- Using word processing and following the suggestions outlined in TBLM Mod.2.6#1: Steps for Developing a Survey, students design questions to verify customers' level of satisfaction with an activity or a thing and identify problems that customers might be having, based on the predictions. Students use appropriate neutral language that shows respect and does not lead the respondents. They print a copy of the survey for each group member.

Applying Strategies
- Using the survey questions they prepared, students interview a few classmates and family members to test/find out whether the wording of their questionnaire is clear and whether it elicits the kind of the answers they are looking for. In their collaborative groups, students compile comments from the respondents about unclear questions and statements, as well as suggestions for improving/rewording the survey questions.
- Students review the answers provided by respondents, focusing on the most frequent suggestions for survey improvement. They categorize replies, noting areas of high incidence for recommending changes to particular questions or statements.
- Students revise their survey questionnaires and repeat the survey with the more precise questions, and with a larger number of participants, this time collecting actual data in response to the questions.
- Each collaborative group uses a spreadsheet to record collected survey data. Students select an appropriate format to display the data.
- Students discuss and record in their journals variables that may have affected responses (e.g., the nature of the sample, the collection method, the sample size, and biases).
- Students complete an Exit Slip, writing a defence of their choice of sample population for the survey and noting what steps they took to minimize bias.
- Students make inferences to generate a conclusion about the data.

Variations/Extensions
- Some students may wish to use a problem identified in the survey and develop an invention or innovation to remedy it.
- As a group, students brainstorm for solutions to the problem they selected.
- Students email their key pals (see ICT.3: Riddle This), querying them with the survey.

SUGGESTIONS FOR ASSESSMENT
- Check the accuracy of students' double-bar graphs, assessing how they created, labelled, and interpreted them.
- Note whether students discuss and explain bias and sample size appropriately.
- Assess each group's survey forms for appropriate questions.

- Note whether students formulate appropriate questions and design appropriate questionnaires.
- Read the Exit Slips to determine whether students chose appropriate sample populations and whether they chose appropriate ways to minimize bias.
- Verify that each collaborative group chose appropriate data-display methods.

CONNECTION TO INVENTION CONVENTION
- Becoming aware of customers' dissatisfaction with products or their suggestions of products that would fulfill their needs helps students focus on an invention to increase customer satisfaction or meet customer needs.

TBLM Mod.2.6#1: Steps for Developing a Survey

1. Include a brief explanation of what you are doing and why you need the information you will be collecting.
   Example: I am planning an invention to help people to _____.

2. Include a clear explanation of the format of the questionnaire and how to answer it.
   Example: There are _____ questions in this survey.
                     They are presented in (explain the format[s]) _____.

3. Ask few questions (four or five). Too many questions could cause respondents to become impatient and give incomplete answers.

4. Ask questions in the affirmative. Avoid the use of "not."
   Example: What activities do you like to do on holidays? (Avoid: "not like")

5. Select an appropriate format for questions. Consider one or a combination of the following:

   - Multiple Choice
     Example: What appliance do you use most often in your home?
     ____ Television   ____ Microwave Oven
     ____ Computer   ____ Hair Dryer

   - Open-Ended, Numeric
     Example: How many electrical appliances are there in your bedroom? ____

   - Open-Ended, Text
     Example: What electrical appliance do you use most often? ____

   - Rating Scale
     Example: On a scale of 1 to 5, with 5 being the highest, how would you rate the usefulness of the following appliances?
     ____ Television   ____ Microwave Oven
     ____ Computer   ____ Hair Dryer

   - Agreement Scale (List in order of "agree" to "disagree.")
     Example: How much do you agree with the following statements?

	Strongly Agree	Agree	Strongly Disagree	Disagree
I would prefer to own fewer things so I have less to clean up.	_____	_____	_____	_____
I would like an invention to help me clean up my room.	_____	_____	_____	_____

6. List the questions in order from establishing the needs or preferences of respondents to building up to the purpose of the survey, which is how the needs can be fulfilled.

7. Test the questionnaire on a partner. Ask for feedback on whether the questions are clear or how they could be improved.

TBLM Mod.2.6#2: Variables That May Affect a Telephone Survey

In a telephone survey, the respondent may…

1. be engaged in an activity, such as cooking a meal, and may be distracted while answering questions

2. answer anything to complete the survey as quickly as possible

3. not understand a question that is asked orally (Some people need to read them.)

4. find a multiple-choice format confusing, offering too many choices to remember

5. become tired and quit before answering all questions (Is the survey too long?)

6. lie about his or her age and provide answers that are inconsistent with the assumed age