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| Lesson 2 – Conserving Water in the Home: a Calendar of Savings In this lesson, students will develop an understanding of costs associated with water consumption. Students collect information about their family’s water use and identify ways that they can conserve water. | | |
| Curriculum Expectations | | Learning Goals |
| **GRADE 4 –VISUAL ARTS**  **OVERALL EXPECTATION**  **D1.** **Creating and Presenting**  -apply the creative process to produce a variety of two- and three-dimensional art works, using elements, principles, and techniques of visual arts to communicate feelings, ideas, and understandings;  **SPECIFIC EXPECTATIONS:**  **D1.2** demonstrate an understanding of composition, using selected principles of design to create narrative art works or art works on a theme or topic  **D1.3** use elements of design in art works to communicate ideas, messages, and understandings  **D1.4** use a variety of materials, tools, and techniques to determine solutions to design challenges  **GRADE 5 -VISUAL ART**  **OVERALL EXPECTATION**  -apply the creative process to produce a variety of two- and three-dimensional art works, using elements, principles, and techniques of visual arts to communicate feelings, ideas, and understandings;  **SPECIFIC EXPECTATIONS**  **D1.1** create two- and three-dimensional art works that express feelings and ideas inspired by their own and others’ points of view  **D1.2** demonstrate an understanding of composition, using selected principles of design to create narrative art works or art works on a theme or topic  **D1.3** use elements of design in art works to communicate ideas, messages, and understandings  **D1.4** use a variety of materials, tools, and techniques to determine solutions to design challenges  **GRADE 4-LANGUAGE & MEDIA LITERACY**  **ORAL COMMUNICATION**  **OVERALL EXPECTATION**  1. listen in order to understand and respond appropriately in a variety of situations for a variety of purposes;  **Listening and Understanding**  **1.1** identify a range of purposes for listening in a variety of situations, formal and informal, and set goals related to specific listening tasks ***(****e.g., to understand learning strategies modelled by the teacher during think-alouds; to develop a response to a commentary on an issue; to share information and ideas about a topic with peers during conversations, discussions, and meetings; to become familiar with and appreciate the sounds of different types of poetry)*  **Active Listening Strategies**  **1.2** demonstrate an understanding of appropriate listening behaviour by adapting active listening strategies to suit a range of situations, including work in groups *(e.g., ask questions to clarify understanding before responding; affirm and build on the ideas of others; summarize and respond constructively to ideas expressed by others; use brief vocal prompts to signal agreement or interest during conversations:* Yes; Say that again, please; Tell me more.  **READING**  **OVERALL EXPECTATION**   1. read and demonstrate an understanding of a variety of literary, graphic, and informational texts, using a range of strategies to construct meaning;   **Demonstrating Understanding**  **1.4** demonstrate understanding of a variety of texts by summarizing important ideas and citing supporting details  **Extending Understanding**  **1.6** extend understanding of texts by connecting the ideas in them to their own knowledge, experience, and insights, to other familiar texts, and to the world around them  **Responding to and Evaluating Texts**  **1.8** express opinions about the ideas and information in texts and cite evidence from the text to support their opinions  **MEDIA LITERACY**  **ORAL EXPECTATIONS**   1. demonstrate an understanding of a variety of media texts;   **SPECIFIC EXPECTATIONS**  **Purpose and Audience**  **1.1** identify the purpose and audience for a variety of media texts *(e.g., this print advertisement is designed to interest children in taking karate lessons; this website is designed to provide information to fans about a favourite singer; this CD cover is designed to attract classical music fans/pop fans/rap fans)*  **Making Inferences/Interpreting Messages**  **1.2** use overt and implied messages to draw inferences and construct meaning in media texts *(e.g., overt message on packaging for a video game:* In this adventure game, characters take big risks and perform amazing deeds; *implied message:* If you buy this game, you can share in the excitement and be more like the characters***)***  **Number Sense and Numeration**  By the end of Grade 4, students will:  • solve problems involving the addition, subtraction, multiplication, and division of single- and multi-digit whole numbers, and involving the addition and subtraction of decimal numbers  to tenths and money amounts, using a variety of strategies;  • demonstrate an understanding of proportional reasoning by investigating whole-number  unit rates.  –solve problems that arise from real-life situations and that relate to the magnitude of whole numbers up to 10 000  -solve problems involving the addition and subtraction of four-digit numbers, using student-generated algorithms and standard  algorithms (e.g., “I added 4217 + 1914 using 5000 + 1100 + 20 + 11.”);  **GRADE 5- LANUAGE & MEDIA LITERACY**  **ORAL COMMUNICATION**  **OVERALL EXPECTATION**   1. listen in order to understand and respond appropriately in a variety of situations for a variety of purposes;   **SPECIFIC EXPECTATIONS**  **Listening to Understand**  **Purpose**  **1.1** identify a range of purposes for listening in a variety of situations, formal and informal, and set goals related to specific listening tasks  **Active Listening Strategies**  **1.2** demonstrate an understanding of appropriate listening behaviour by adapting active listening strategies to suit a range of situations, including work in groups  **Demonstrating Understanding**  **1.4** demonstrate an understanding of the information and ideas in oral texts by summarizing important ideas and citing a variety of supporting details  **Extending Understanding**  **1.6** extend understanding of oral texts by connecting the ideas in them to their own knowledge, experience, and insights; to other texts, including print and visual texts; and to the world around them  **READING**  **OVERALL EXPECTATION: 1. Reading for Meaning**  **1.** read and demonstrate an understanding of a variety of literary, graphic, and informational  **SPECIFIC EXPECTATIONS**  **Comprehension Strategies**  **1.3** identify a variety of reading comprehension strategies and use them appropriately before, during, and after  **Demonstrating Understanding**  **1.4** demonstrate understanding of a variety of texts by summarizing important ideas and citing supporting details  **Extending Understanding**  **1.6** extend understanding of texts by connecting the ideas in them to their own knowledge, experience, and insights, to other familiar texts, and to the world around them  **GRADE 4**- **MATHEMATICS**  **OVERALL EXPECTATIONS**  **Number Sense and Numeration**  -read, represent, compare, and order whole numbers to 10 000, decimal numbers to tenths, and simple fractions, and represent money amounts to $100;  -solve problems involving the addition, subtraction, multiplication, and division of single- and multi-digit whole numbers, and involving the addition and subtraction of decimal numbers to tenths and money amounts, using a variety of strategies;  -demonstrate an understanding of proportional reasoning by investigating whole-number unit rates.   * **OVERALL EXPECTATIONS**   **Data Management and Probability**   * -collect and organize discrete primary data and display the data using charts and graphs, including stem-and-leaf plots and double bar graphs; * –read, describe, and interpret primary data and secondary data presented in charts and graphs, including stem-and-leaf plots and double bar graphs; * **SPECIFIC EXPECTATIONS** * **Collection and Organization of Data** * –collect data by conducting a survey or an experiment to do with * themselves, their environment, issues in their school or the community, or content from another subject, and record observations or measurements; * –collect and organize discrete primary data and display the data in charts, tables, and graphs (including stem-and-leaf plots and * double bar graphs) that have appropriate titles, labels (e.g., appropriate units marked on the axes), and scales (e.g., with appropriate increments) that suit the range and distribution of the data, using a variety of tools (e.g., graph paper, simple spreadsheets, dynamic statistical software). * **Data Relationships** * –read, interpret, and draw conclusions from primary data (e.g., survey results, measurements, observations) and from secondary data (e.g., temperature data in the newspaper, data from the Internet about endangered species), presented in charts, tables, and graphs (including stem-and-leaf plots and double bar graphs); * –compare similarities and differences between two related sets of data, using a variety of strategies (e.g., by representing the data using tally charts, stem-and-leaf plots, or double bar graphs; by determining the mode or the median; by describing the shape of a data set across its range of values).   **GRADE 5-** **MATHEMATICS**  **OVERALL EXPECTATION**  **Data Management and Probability**  –collect and organize discrete or continuous primary data and secondary data and display the data using charts and graphs, including broken-line graphs;  –read, describe, and interpret primary data and secondary data presented in charts and graphs, including broken-line graphs;  **SPECIFIC EXPECTATIONS**  **Data Management and Probability: Collection and Organization of Data**  –collect data by conducting a survey or an experiment (e.g., gather and record air temperature over a two-week period) to do with themselves, their environment, issues in their school or community, or content from another subject, and record observations or measurements; –collect and organize discrete or continuous primary data and secondary data and display the data in charts, tables, and graphs  **Data Management and Probability: Data Relationships**  –read, interpret, and draw conclusions from primary data (e.g., survey results, measurements, observations) and from secondary data (e.g., precipitation or temperature data in the newspaper, data from the Internet about heights of buildings and other structures), presented in charts, tables, and graphs (including broken-line graphs);  –compare similarities and differences between two related sets of data, using a variety of strategies (e.g., by representing the data using tally charts, stem-and-leaf plots, double bar graphs, or broken-line graphs);  **GRADE 4 -SOCIAL STUDIES**  **B2. Inquiry: Balancing Human Needs and Environmental Stewardship**  **Inquiry:** use the social studies inquiry process to investigate some issues and challenges associated with balancing human needs/wants and activities with environmental stewardship in one or more of the political and/or physical regions of Canada (FOCUS ON: *Perspective*)  **B2.2** gather and organize information and data from various sources to investigate issues and challenges associated with balancing human needs/wants and activities with environmental stewardship in one or more of the political and/or physical regions of Canada  **Grade 5- SCIENCE & TECHNOLOGY**  **Understanding Earth and Space Systems: Conservation of Energy and Resources**  **OVERALL EXPECTATION**  **1.** analyse the immediate and long-term effects of energy and resource use on society and the environment, and evaluate options for conserving energy and resources;  **Relating Science and Technology to Society and the Environment**  **1.1** analyse the long-term impacts on society and the environment of human uses of energy and natural resources, and suggest ways to reduce these impacts ***(****e.g., turning off the faucet while brushing teeth or washing and rinsing dishes conserves water; reusing or recycling products, or using fewer products, conserves natural resources and energy)*  **1.2** evaluate the effects of various technologies on energy consumption ***(****e.g., improving our home’s insulation allows us to conserve heat and reduce energy consumption; aerodynamic design can improve the energy efficiency of cars and buses; household appliances designed to make our lives easier use large amounts of energy; some cars and recreational vehicles use energy less efficiently than others)*, and propose ways in which individuals can improve energy conservation | | At the end of this lesson, students will know, understand and be able to:   * Research water usage make comparisons at their homes and locally; * Solve authentic inquiries related to water conservation issues; * Collect data and use data management to create graphs representing real-life situations; * Read, describe, and interpret primary data and secondary data presented in charts and graphs * Use number sense and numeration to solve real-life problems iinvolving the addition, subtraction, multiplication, and division of single- and multi-digit whole numbers, and involving the addition and subtraction of decimal numbers to tenths and money amounts, using a variety of strategies; * Communicate some issues and challenges associated with balancing human needs/wants and activities with environmental stewardship. |
| ; **Instructional Components and Context** | | |
| Terminology Environmental footprint  Carbon Footprint  Economical  Conservation  Consumption  Water Resources Prior Knowledge Students should have an established understanding of how to:   * make a bar graph * read graphs * take notes * answer written questions * follow classroom routines * create some sketches * to work with others | Materials:   * BLM 5 Comparison of Water Costs (Student Resource) * BLM 5A **How Much Water Do You Use?** (Student /Teacher Resource)   Resources:  Water Use Calculator-Water Collection Calculator in the Home  <http://www.csgnetwork.com/waterusagecalc.html>  http://www.eco.on.ca/blog/2012/03/19/discovering-ontarios-water-footprint/  Sites about how to save water  <http://www.ecokids.ca/pub/eco_info/topics/water/water/>  http://www.uaex.edu/publications/pdf/FSA-9520.pdf  <http://eartheasy.com/live_water_saving.htm>  <http://wateruseitwisely.com/100-ways-to-conserve/>  <http://www.goodgirlgonegreen.com/reusing/water-conservation>  <http://www.ec.gc.ca/eau-water/default.asp?lang=En&n=F25C70EC-1>  <http://www.uaex.edu/publications/pdf/FSA-9520.pdf>  http://timeforchange.org/what-is-a-carbon-footprint-definition  **Note:**  The *Water Calculator* compares your water use to a similar average and efficient house in your region.  The Water Calculator estimates the energy savings and carbon footprint of your hot water usage, and helps identify specific areas for improving overall household water efficiency. Water conservation is easy and the Water Calculator gets you started right away.  http://www.home-water-works.org/calculator | |

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| Minds On (Approximately 30 minutes) | Connections |
| **Teacher will:**   * Model using the online activity how to gather the required data about water usage in their homes using the Water Collection Calculator available on:   <http://www.home-water-works.org/calculator> Use BLM 5A **How Much**  **Water Do You Use?** as an example of the types of questions will have to  answer about their homes.  **Students will**:   * Use the information modeled in class to complete **BLM 5B Comparing Water Costs** with data from his or her own home. Parents may need to support the students with this activity. | Guiding Questions:   * How do we use water? * How can we conserve water indoors and outdoors?   Assessment:  Assessment for Learning   * Hands-up * Data collection * Observe * Check group and individual lists of ideas of how to save water   Differentiated Instruction:   * Support students with guiding questions. * Provide scribing and computer options. * Students can use voice recording (assistive technology) to record their answers * Present information orally. |
| Action! (Approximately 60 minutes) | Connections |
| Individual Data-Gathering Homework Assignment: Ask students to collect information about how their family’s water usage for the duration of one week using the *Water Collection Calculator in the Home* sheet <http://www.csgnetwork.com/waterusagecalc.html>)  **Students will**:   * Collect data about how their family’s water usage; * Complete the *Water Usage Activity*;   <http://www.home-water-works.org/calculator> on line with parents   * Print out the results from their survey from <http://www.home-water-works.org/calculator>; * Identify ways that they can help their families save money and resources by using less water; * Share their ideas with their families; * Participate in a whole class discussion and investigation about water usage. * Use **BLM 5B Comparing Water Costs** for students to calculate possible economic savings through simple water conservation practices.  Whole Class:After individual data collection has occurred, the teacher will (10 minutes):  * Select a data topic to create a bar graph with for example, *Where I Use Water? How does my family’s usage compare with other family’s usage?* * Guide students in the creation of a graph together as a class using the information from student volunteers. Use results stated in BLM 5B Comparing Water Costs (Student /Teacher Resource) to model the creation of a bar graph on large chart paper. Elicit the prior knowledge of students to support this demonstration.   The following task will employ the information from the homework assignment which involved gathering data about students’ families water usage:  **Individual**: (10 minutes)  **Students will:**   * Create their own bar graphs with the data they have collected.   **In Small Groups:** (15 minutes)  **Students will**:   * Spend a few minutes comparing their bar graphs with their peers. * Volunteer to present their results to the entire class; * Discuss their conclusions as a class   Extension: Alternatively the results of other aspects of the water survey summary may be compared among students.  **Teacher will**:   * Choose to put anonymous graph results up for others to see. This may be compared to the average the average Ontario consumer’s water use or to the Canadian rate of water use, obtained on sites in the *Resources Section*.  In pairs (40-50 minutes.)Students will;  * Explore the websites listed in the Resource section under “Water Conservation" to gather ideas for how to reduce the amount of water consumed. They may identify, from the ideas gathered, 2-3 ways that they believe that their families can make changes in water consumption the locations given. See **BLM #6** **Ways to Save Water**; * Try to collect a minimum of 16 different ways to conserve water and initial one choice in each category which will become a drawing in Lesson 3; * Discuss ways their families can set goals to adjust water usage including environmental and financial and present these to their families. Use the information from the print out from <http://www.home-water-works.org/calculator>; * Record the goals in their journals; | Assessment:  Assessment as Learning   * Group Discussion * Data Collection * Journal Entry Exit Slip |
| Consolidation (Approximately 40-50 minutes) | Connections |
| Whole Class: (5 minutes) **Teacher will:**   * Refer to page 3 on **BLM 5B Comparing Water Costs**. Read the Discovering Ontario’s Water Footprint” aloud with students by Gord Miller (Ontario Minister of the Environment): <http://www.eco.on.ca/blog/2012/03/19/discovering-ontarios-water-footprint/> * Facilitate class discussion about the article. Refer to ***Guiding Questions*** and also see questions on **BLM 5B Comparing Water Costs.**  Extension: (60 mins)  * Teacher can provide students with BLM 5B Comparison of Water Costs comparing costs around Ontario and other provinces across Canada. Using guiding questions on **BLM 5B**, the teacher facilitates discussion about why the costs differ across the country (e.g., cost of accessing fresh water).  Whole Class: Exit slip (15 minutes.)  * Before the end of the lesson, (about 10 minutes) ask students to respond to these sentence starters in their journals. Put the prompts on the board:   *The most important thing I learned…*  *Something I need explained more is....*    **Teacher will:**   * Collect the student responses, review and assess them before the next class * Begin the next class by answering some of the students’ questions stemming from “Something I need explained more is” | ***Guiding Question:***   * *Do you agree that we need to increase the price of water to get people to save it?* * *What is Gord Miller’s key message?* |
| Notes: | |