TITLE:
Linking Social Studies History and Geography with Mathematics

DIVISION:
Primary

STRAND:
People and Environments: The Local Community

GRADE 1: RECYCLING PICTOGRAPH

These activities link People and Environments: The Local Community with data management expectations in math.

BIG IDEAS

Communities have natural and built features and provide services that help meet the needs of the people who live and work there. Our actions can have an impact on the natural and built features of the community, so it is important for us to act responsibly.

Guiding Question(s)

- How much are the recycling bins in your classroom and in the school being used by the students and the staff?
- Who recycles the most?
- Why do you think this class recycles the most? How could you motivate other classes to recycle more? Explain your thinking.

Framing Question(s)

- What are people's responsibilities within their community?
- What might happen if people did not meet their responsibilities? *(The Ontario Curriculum, Social Studies, 2013* pg 65)

Learning Goals

- explain what effects can happen now and in the future in our community when people interact with the natural and built features of a community (for example, when people do not use the garbage cans in parks or beaches the park and water become polluted and dirty)
- recognize patterns in the types of services provided by the government for a community (for example, garbage and recycling collection happens once a week, the grass is cut in the park every month)

CONCEPTS OF DISCIPLINARY THINKING

Interrelationships:
This concept requires students to explore connections within and between natural and/or human systems, including how they adapt to and have an impact on one another. Students explore various components within a system, interactions between components of a system, and relationships between systems.

Cause and Consequence:
This concept requires students to determine the factors that affect or lead to something (e.g., an event, situation, action, interaction) as well as its impact or effects. Students study the causes and consequences of various types of events, situations, and interactions in both the natural environment and human society.

Social Studies Inquiry Process (Revised [2013] SSHG Curriculum page 23)

Inquiry Process:

The students will collect data on recycling bin use in different classrooms, graph the data they collect, determine trends in the data, and create a poster to promote recycling in their school based upon the data they collected.

The Social Studies Inquiry Process Model can be viewed on page 23 of the 2013 Social Studies Curriculum that can be viewed through the link posted below.

http://www.edu.gov.on.ca/eng/curriculum/elementary/sshg18curr2013.pdf

The Spatial Skills: Using Maps, Globes, and Graphs (Ontario Curriculum pages 24-25)

Spatial Skill:

Students will collect data on recycling bin use in different classrooms in the school, develop a pictograph by hand or by computer, and then they will analyze their graphs to determine trends in the data. Electronic applications could be used if the students have the required skill sets and access to technology to complete the assignment.

PRIMARY ACTIVITY

- Collect recycling data from the classroom over a period of time, by counting and categorizing the contents of the recycling bins (number of plastic bottles, number of glass items etc.) then build a pictograph as a class and determine trends in the data. This will serve as a diagnostic activity http://www.softschools.com/math/data_analysis/pictograph/make_your_own_pictograph/
- Analyze the pictographs created and look for trends
- Compare the data collected from the assigned class to other classes in the school

- Use the data and trends found to create a poster that promotes recycling around the school community

DIFFERENTIATION SUGGESTIONS

Word prediction software could be provided to those students who need support with their writing when they answer the main questions of the activity. Students who have difficulty writing out their ideas could use word prediction software to type out their work or they could use an iPad application like Dragon Dictation, Dictamus, or the camera to record their oral explanations of their thinking. This activity could also be conducted with older "grade level buddies" similar to reading buddies. The older students could help keep the younger students on task and monitor them as they move from one room to the other.

Edugains outlines many effective ways to differentiate lessons, links to these resources are provided below.

http://www.edugains.ca/newsite/index.html

Edugains – Differentiated Instruction - DI educators package – DI scrapbook:
http://www.edugains.ca/newsite/di2/edupackages/2010educatorspackage.html

TECHNOLOGY INTEGRATION OPPORTUNITIES

Pictographs can be easily generated through the web link listed in the resources section. Students who have difficulty writing their ideas could use predictive software to type out their work or use iPad applications such as Dragon Dictation, Dictamus, or the camera to record their thinking orally.

ASSESSMENT

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The students will collect recycling bin data from their classroom recycling bin over five days. As a class they will create a pictograph on a chart to display the data they collected. The teacher could also work with the students on a Smartboard to develop an electronic pictograph using the link listed below. This activity will enable the teacher to determine the students' ability to collect data, build a pictograph and look for trends in the data as a diagnostic assessment before the students collect their own data, build their own graphs and create their own action plans. Ongoing descriptive feedback can be used throughout the activity.

http://www.softschools.com/math/data_analysis/pictograph/make_your_own_pictograph/

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This activity could be evaluated using anecdotal notes that track student progress through the assignment. Teachers could also develop anchor charts with their students that outline how to construct the graphs, analyze trends in the graphs and

their abilities to use the data they graphed and other inquires to answer the three main questions of the activity.

Descriptive feedback is another assessment strategy teachers could use to provide students with the constructive criticism they need to improve their work.

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Students will review the information posted on the anchor charts to track their own progress in relation to the assignment and determine their own next steps. They will also be expected to act upon any descriptive feedback that they have been given by their teacher to improve their work, work habits, or to help facilitate their completion of the assignment.

The ability to conduct the survey, create the required pictograph, determine trends in the data, and create an action plan to promote recycling within the school community could be assessed using a rubric (teacher generated or teacher/student generated). A checklist would also be effective.

OVERALL EXPECTATIONS

Grade 1: Social Studies:

B1. Application: describe some aspects of the interrelationship between people and the natural and built features of their community, with a focus on how the features of and services in the community meet people's needs (FOCUS ON: *Interrelationships*)

B2. Inquiry: use the social studies inquiry process to investigate some aspects of the interrelationship between people and different natural and built features of their local community, with a focus on significant short- and long-term effects of this interrelationship (FOCUS ON: *Cause and Consequence*)

Grade 1 Math – Data Management:

Overall Expectation #1: collect and organize categorical primary data and display the data using concrete graphs and pictographs, without regard to the order of labels on the horizontal axis

Overall Expectation #2: read and describe primary data presented in concrete graphs and pictographs

SPECIFIC EXPECTATIONS

Grade 1: Social Studies:

B2.2 gather and organize information on the interrelationship between people and the natural and built features of their community, and on the effects of this interrelationship, using sources that they have located themselves or that have been provided to them *(e.g., use a tally sheet to monitor the use of garbage cans and*

recycling containers around the school; use a digital camera to record the amount of garbage on the ground in the park; organize satellite images that show changes in natural or built features in their community; interview a person who works in the park)

B2.4 interpret and analyse information and data relevant to their investigations, using a variety of tools *(e.g., plot their data on a pictograph or chart to determine ways in which an area in their community has changed; compare their own photographs of the way an area looks now to old photographs to determine changes)*

B1.3 create a plan that outlines some specific ways in which they can responsibly interact with the built and/or natural environment in the local community

Grade 1 Math – Data Management:
Collecting and Organizing Data:

#2 - collect and organize primary data (e.g., data collected by the class) that is categorical (i.e., that can be organized into categories based on qualities such as colour or hobby), and display the data using one-to-one correspondence, prepared templates of concrete graphs and pictographs (with titles and labels), and a variety of recording methods (e.g., arranging objects, placing stickers, drawing pictures, making tally marks) (Sample problem: Collect and organize data about the favourite fruit that students in your class like to eat.)

Data Relationships:

#1 - read primary data presented in concrete graphs and pictographs, and describe the data using comparative language (e.g., more students chose summer than winter as their single favourite season)

#2 - pose and answer questions about collected data (Sample problem: What was the most popular fruit chosen by the students in your class?)

CITIZENSHIP EDUCATION FRAMEWORK

Active Participation:
- Adopt leadership roles in their community
- Participate in their community

Attributes:
- Develop attitudes that foster civic engagement

RESOURCES

- Online Pictograph Generator:

http://www.softschools.com/math/data_analysis/pictograph/make_your_own_pictograph