TITLE:
Linking Social Studies History and Geography with Mathematics

DIVISION:
Primary

STRAND:
People and Environments: Living and Working in Ontario

GRADE 3: RECYCLING PICTOGRAPH

These activities link People and Environments: Living and Working in Ontario with data management expectations in math.

BIG IDEAS

The natural features of the environment influence land use and the type of employment that is available in a region.

Guiding Question(s)

- Where do people work in our community?
- What kinds of jobs do people in our community have?
- Where do members of your family / guardians work and what is their job?
- Why are these jobs available in our community?
- How might your data be different from that of another community?

Framing Question(s)

- How do physical features influence the ways in which land is used? How does the way land is used influence local communities and local jobs?
- What might happen if people did not meet their responsibilities?

Learning Goals

- explain how relationships between the natural environment (i.e. large flat land spaces with fertile soil), land use (growing crops) and employment (farmer, grocery store owner) are interconnected with and influence different areas, towns and cities in Ontario and the impact of these interactions

- determine how the relationships between the natural environment, land use, and employment can be helpful and / or harmful in relation to the natural and / or human environment (example: farms allow for large land spaces not to be developed preserving the countryside, however, the farming process could add chemicals to the soil and pesticides that are damaging to the environment)

CONCEPTS OF DISCIPLINARY THINKING

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.

Perspective:
This concept refers to the ways in which different individuals and/or groups view something (e.g., an issue, event, development, person, place, process, interaction). Students learn that different groups have different perspectives, which depend on factors such as beliefs, social position, and geographic location, among others. Students also learn the importance of analyzing sources to determine whose perspectives they convey and of gathering sources that reflect multiple perspectives.

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

Inquiry Process:

The students will collect data on the employment of people within their family and the school community, graph the data they collect, determine trends in the data, and complete a Venn diagram that compares and contrasts the employment patterns in two different municipalities in Ontario.

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 the employment of people within their family and school community through a survey, develop a bar graph by hand or by computer to display this data, and then they will analyze their graphs to determine trends in the data. They will then examine data from another municipality in Ontario and compare and contrast the employment patterns of the municipalities by completing a Venn Diagram. Electronic applications could be used if the students have the required skill sets and access to technology to complete the assignment.
http://nces.ed.gov/nceskids/graphing/classic/bar.asp

PRIMARY ACTIVITY

The students will complete the following in this activity:

- Collect data regarding the employment of the people/guardians in their family in

their own classroom, build a bar graph as a class and determine trends in the data. This will serve as a diagnostic activity

- Work in teams of two or three and in an assigned classroom in the school to collect data regarding the employment of family members/guardians within that class
- Construct a bar graph by hand or by using computer applications to display the data collected
  http://nces.ed.gov/nceskids/graphing/classic/bar.asphttp://nces.ed.gov/nceskids/graphing/classic/bar.asp
- Analyze the bar graphs they create and look for trends
- Compare the data collected from the class they were assigned to other classes in the school
- Use the data and trends found to create a Venn diagram in order to compare employment opportunities within two different municipalities within Ontario.
  http://www.readwritethink.org/files/resources/interactives/venn_diagrams/

To find data on employment in various Ontario municipalities use the link below. Select "Ontario," then "city / town" then click the detailed profile and then scroll down to the Occupation pie chart. http://www.city-data.com/canada/

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
Bar graphs can be easily generated through Microsoft Excel, Mac Numbers, or a

variety of iPad applications. Students could also use the link posted below to develop their bar graphs using an online bar graph generator. 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.

ASSESSMENT

Students will collect data on the employment of different people within their school community. As a class, they will create a bar graph to represent the diversity of employment within their class. The teacher could also work with the students on a Smartboard to develop an electronic bar graph using the link listed below. This activity will enable the teacher to determine the students' ability to collect data, build a bar graph and look for trends in the data as a diagnostic assessment before the students collect their own data, build their own graphs and complete a Venn diagram that compares and contrasts the employment patterns in their municipality with that of another municipality in Ontario.

http://nces.ed.gov/nceskids/graphing/classic/bar.asphttp://nces.ed.gov/nceskids/graphing/classic/bar.asp

Anecdotal notes can be used to track students' progress throughout the activity. Teachers could also develop anchor charts with their students that outline how to construct the graphs, analyse trends in the graphs, their abilities to use the data they graphed, and the types of points that are acceptable in the Venn diagram that they will complete.

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

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 bar graph, determine trends in the data, and complete the Venn diagram that compares employment patterns in two different Ontario municipalities could be assessed using a rubric that could be teacher generated or teacher and student generated. A checklist would also be effective.

OVERALL EXPECTATIONS

Social Studies:

B2. Inquiry: use the social studies inquiry process to investigate some of the environmental effects of different types of land and/or resource use in two or more Ontario municipal regions, as well as some of the measures taken to reduce the negative impact of that use (FOCUS ON: *Cause and Consequence; Perspective*)

B3. Understanding Context: describe major landform regions and types of land use in Ontario and some of the ways in which land use in various Ontario municipalities addresses human needs and wants, including the need for jobs (FOCUS ON: *Significance*)

Mathematics:

Overall Expectations #1: collect and organize categorical or discrete primary data and display the data using charts and graphs, including vertical and horizontal bar graphs, with labels ordered appropriately along horizontal axes, as needed

Overall Expectation #2: read, describe, and interpret primary data presented in charts and graphs, including vertical and horizontal bar graphs

SPECIFIC EXPECTATIONS

Social Studies:

B2.4 interpret and analyse information and data relevant to their investigations, using a variety of tools

B3.4 identify and describe the main types of employment that are available in two or more municipal regions in Ontario *(e.g., jobs dependent on natural resources; jobs in manufacturing, tourism and recreation, the service sector, education, government)*

Mathematics:
Collecting and Organizing Data:

#2 – collect data by conducting a simple survey about themselves, their environment, issues in their school or community, or content from another subject

#3 – collect and organize categorical or discrete primary data and display the data in charts, tables, and graphs (including vertical and horizontal bar graphs), with appropriate titles and labels and with labels ordered appropriately along horizontal axes, as needed, using many-to-one correspondence

Data Relationships:

#1 – read primary data presented in charts, tables, and graphs (including vertical and horizontal bar graphs), then describe the data using comparative language, and describe the shape of the data (e.g.,"Most of the data are at the high end."; "All of the data values are different.")

#2 – interpret and draw conclusions from data presented in charts, tables, and graphs

CITIZENSHIP EDUCATION FRAMEWORK
Structures:
- Develop an understanding of how political, economic and social institutions affect their lives

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RESOURCES

- Online generator to build a bar graph:

http://nces.ed.gov/nceskids/graphing/classic/bar.asp

- Online generator to build a Venn diagram:

http://www.readwritethink.org/files/resources/interactives/venn_diagrams/