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CGR 4E The Environment and Resource Management, Grade 12, Workplace

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Writing for a Purpose: Constructing Graphs

GEOGRAPHY CGR 4E (Population Growth)

When students can get the 'picture' of a form of writing in their heads, they feel more confident about creating the product. A template or framework is a skeletal structure for a writing form that allows students to organize thoughts and researched information in order to write a first draft.

Purpose

- Provide students with a template to scaffold their understanding of a form of writing and help them to organize information before drafting the piece.
- Provide students with an opportunity to develop appropriate graphing skills.

Payoff

Students will:

- learn the common expectations for the form and components of a particular writing/graphing assignment.
- organize their writing and ensure that it meets the requirements of the assignment.

Tips and Resources

- *Unit 4 of the CGR 4E Course Profile* focuses on Population and Resources and Sharing the Wealth. This unit provides students with opportunities to work with statistics that are appropriate to more complex graphing techniques.
- Diagnostic assessment is necessary for teachers as they begin to work with students in constructing graphs. Generally graphing is taught in Grade 9 geography and should be revisited and applied using different topics in subsequent courses. See *Think Literacy: Cross-Curricular Approaches, Grades 7-9, Subject Specific Examples, Grade 9 Academic Geography*, pp. 18-22, pg. 44 for further information on writing graphs.
- See *Think Literacy: Cross Curricular Approaches, Grades 7-12*, pg.140 for general information on writing.
- Clear communication includes accuracy of detail and careful attention to the use of graphic conventions.
- A Socratic lesson which illustrates a variety of graphs and graphing techniques should be used in conjunction with this strategy in order to support students in creating more complex graphs.
- Teachers also may need to pre-teach, or review:
 - Types of simple graphs (e.g., bar, line, pie) and more complex graphs (e.g., multiple line graphs, multiple bar graphs, stacked bar graphs, scatter graphs, and logarithmic scales).
 - Conventions of graph reading and writing (e.g., labels, unit of measurement, title).
 - Vocabulary and/or concepts associated with the graph reading and graph writing exercises.
- Graphing conventions include:
 - Appropriate title
 - Labels for axes
 - Legend (where appropriate)
 - Appropriate units of measurement
 - Accuracy/appearance
- If completing the graphs electronically, the teacher should be familiar with the programs available for student use.
- See *Teacher and Student Resources, Tips for Graphing, Think Literacy: Cross-Curricular Approaches, Grades 7-12, Subject –Specific Examples, Geography, Grade 9 Academic*, pp 20-22.

Further Support

- The template for any individual writing assignment can be revised to make the modifications or accommodations necessary for students with special needs. For example, reduce the number of paragraphs or supporting details, create different expectations for research, or reduce its complexity.



Writing for a Purpose: Constructing Graphs

GEOGRAPHY CGR 4E (Population Growth)

| What teachers do | What students do |
|---|---|
| <p>Before Pre-teach or review :</p> <ul style="list-style-type: none"> - Types of graphs (e.g., line, bar, pie); -Conventions of graphing; -Vocabulary and/or concepts associated with the graphing exercise. <ul style="list-style-type: none"> • Pose questions that help students clarify the purpose of making a graph. • Model graphing techniques. • Provide a graph and statistics that are authentic and relevant for the students. • Prepare a hand-out identifying expectations for each particular graphing task. • Remind students to bring appropriate materials to class. • Prepare copies of the handout <i>Tips for Visual Literacy – Writing Graphs Checklist</i> found in the <i>Think Literacy: Cross Curricular, Grades 7-9, Subject-Specific Examples, Geography, Grade 9 Applied</i>, pp. 48. | <ul style="list-style-type: none"> • Review different types of graphs and read over the handout on <i>Tips for Visual Literacy – Writing Graphs Checklist</i> and review strategies that others use to construct graphs, in preparation for constructing their own graph. • Bring appropriate materials to class (e.g., rule, graph paper). |
| <p>During</p> <ul style="list-style-type: none"> • Model basic cartography. See Student Resource, <i>Tips for Graphing</i> in the <i>Think Literacy: Cross Curricular Approaches, Grades 7-9 Subject Specific Examples, Grade 9 Academic</i> pp. 21-22. • Explain the concepts of ‘exponential growth’, ‘rate’ and ‘logarithmic scales’. • Have a full class discussion where the students are asked questions to clarify the process. <ul style="list-style-type: none"> -What kind of graph should be used? -What is an appropriate title for the graph? | <ul style="list-style-type: none"> • Listen and observe the teacher modeling the constructing of graphs (Graph I and Graph II). Create their own graphs. • Identify and use the conventions for graphing as listed on the checklist in the <i>Think Literacy: Grades 7-9, Subject-Specific Examples, Geography, Grade 9 Applied</i>, pp. 48. • Use Think/Pair/Share to generate questions and answers about graphing and global population growth. • Construct a graph of regional patterns of population growth (Graph III). |
| <p>After</p> <ul style="list-style-type: none"> • Have students use their Student Resource, <i>Tips for Graphing (Think Literacy: Cross Curricular Approaches, Grades 7-9 Subject Specific Examples, Geography, Grades 7-9, Academic, pp. 21-22 or Applied pp 44,48.)</i>, to assess and/or peer edit another student’s graph. • Assign another graph using different data. | <ul style="list-style-type: none"> • Read the graph using the tips for a literacy organizer. • Use the <i>Tips for Graphing Organizer, Writing Graphs Checklist</i> to check the graph for accuracy and completeness. • Read the graph using the <i>Tips for Visual Literacy, Reading Graphs Organizer resource</i>. • Compare graphs to current new reports and articles on population growth patterns. • Predict the future of the population growth. |

Notes



Writing for a Purpose: Constructing Graphs

GEOGRAPHY CGR 4E (Population Growth)

Global Population Patterns

1. Review types of graphs and appropriate graphing techniques.
2. Prepare transparencies of the statistics and graph paper for modeling on overheads.
3. Model completing a line graph of the Global Population Growth using an arithmetic scale (see Graph I), and the statistics in Table 1. Students can prepare this on graph paper or can use a computer to prepare the appropriate graph. You will need to predetermine the strategy to be used.
4. Identify the pattern/trend shown by the graph. Discuss with the students the ideas of 'exponential growth', the reasons for such growth, the consequences of such growth, and determine 'trends'.
5. Introduce the concept of 'rate of growth' and model how to graph this on semi-log graph paper. Have students complete Graph II using the same data as for Graph I.
6. Compare the two graphs; you could ask students to use a Venn diagram to write down similarities and differences. Discuss the advantages of using semi-log graph paper and the trend in the growth rate of global population shown on the graph.
7. Have students predict what they think will occur with future population growth given the trend(s) shown on the graph.
8. A discussion of global population growth should include the 'inequitable' distribution and variation in growth rates. Have students complete a multiple line graph to compare the region. Again, once the graph is complete, have the students compare the patterns shown for the distribution of population.
9. Ask students to draw conclusions about population growth from the 3 graphs. You may wish to use Think/Pair/Share, or a Place Mat strategy to generate ideas, and then share these ideas with the entire class. (See *Think Literacy: Cross-Curricular Approaches, Grades 7-9, Subject-Specific Examples, Geography, Grade 8*, pg 44).



Student/Teacher Resource

Writing for a Purpose: Constructing Graphs

GEOGRAPHY CGR 4E (Population Growth)

Constructing Graphs – Global Population Growth

**Table 1: Global Population Growth
(200 AD – 2000)**

| Year | Population (in millions) |
|--------|-----------------------------|
| 200 AD | 310 |
| 600 | 300 |
| 1000 | 400 |
| 1200 | 500 |
| 1400 | 400 |
| 1500 | 440 |
| 1600 | 540 |
| 1700 | 720 |
| 1800 | 800 |
| 1900 | 1600 |
| 1920 | 1800 |
| 1940 | 2300 |
| 1950 | 2500 |
| 1960 | 3000 |
| 1970 | 3700 |
| 1980 | 4400 |
| 1990 | 5300 |
| 2000 | 6100 |

Sources: UN, 2002.
Molyneux and Mackenzie, *World Prospects*, 1987.

**Table 2: Population Growth by World Regions (1950-2000)
(In millions)**

| Year | Africa | Asia | Europe | Latin America | North America | Oceania |
|------|--------|------|--------|---------------|---------------|---------|
| 1950 | 221 | 1389 | 547 | 167 | 172 | 11 |
| 1960 | 227 | 1701 | 604 | 218 | 204 | 16 |
| 1970 | 357 | 2143 | 656 | 285 | 232 | 20 |
| 1980 | 470 | 2632 | 692 | 361 | 256 | 23 |
| 1990 | 622 | 3168 | 721 | 442 | 284 | 26 |
| 2000 | 796 | 3680 | 728 | 520 | 316 | 30 |

Source: UN, 2002.



Writing for a Purpose: Constructing Graphs

GEOGRAPHY CGR 4E (Population Growth)

Instructions for graphing and analysis

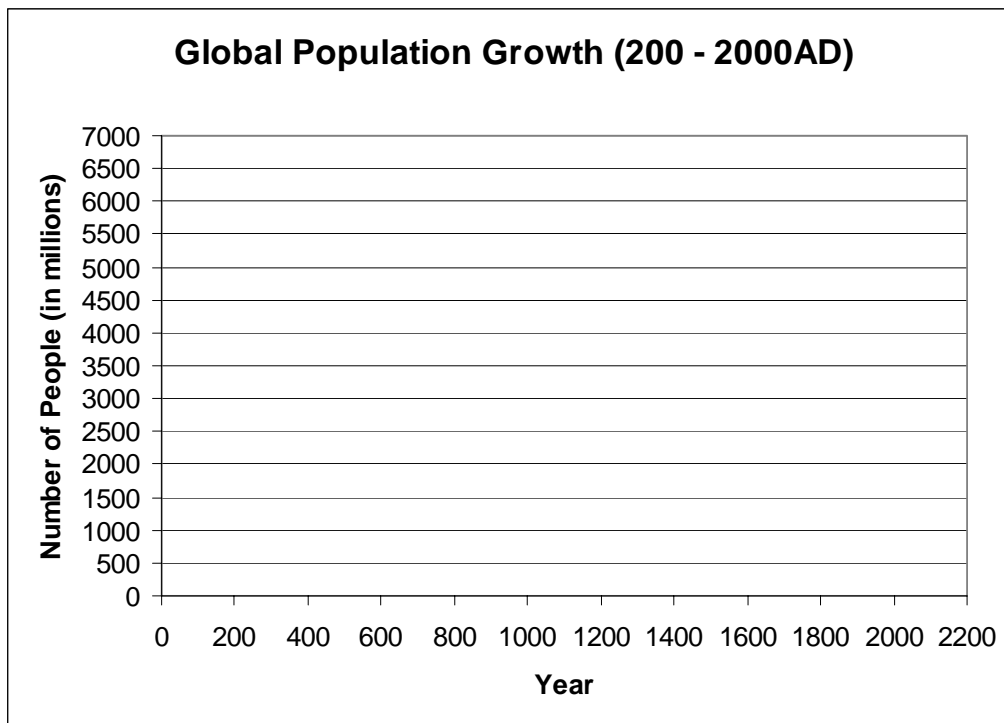
Part A:

1. Complete Graph I to show global population growth from 200 – 2000 AD. (Table 1)
2.
 - a) Describe the pattern shown by the graph.
 - b) What does this graph tell you about how population has grown historically?
 - c) This type of growth is called 'exponential growth'. What does this mean?
3. Complete Graph II using the same statistics but this time plot it on semi-log graph paper which will show you the 'rate of growth'. (Table 1)
4.
 - a) How is Graph II different from Graph I?
 - b) What is happening to the world's population growth rate?

Part B:

5. Complete Graph III to compare the global population growth by world region.
6. What patterns or trends of growth are shown on this graph?

Graph I



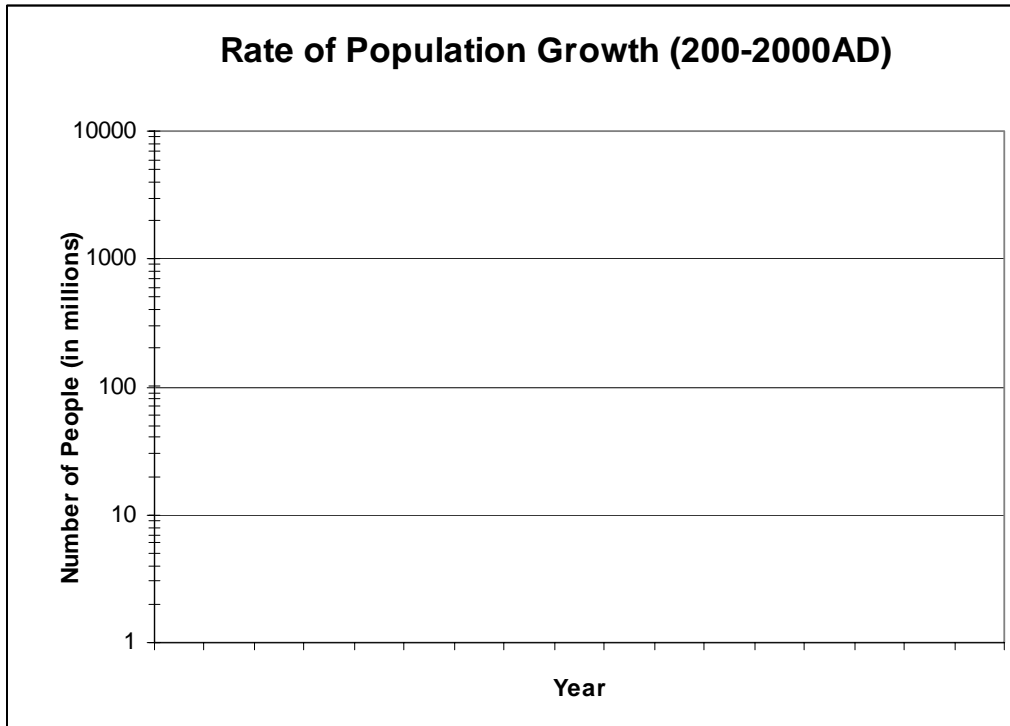


Student Resource

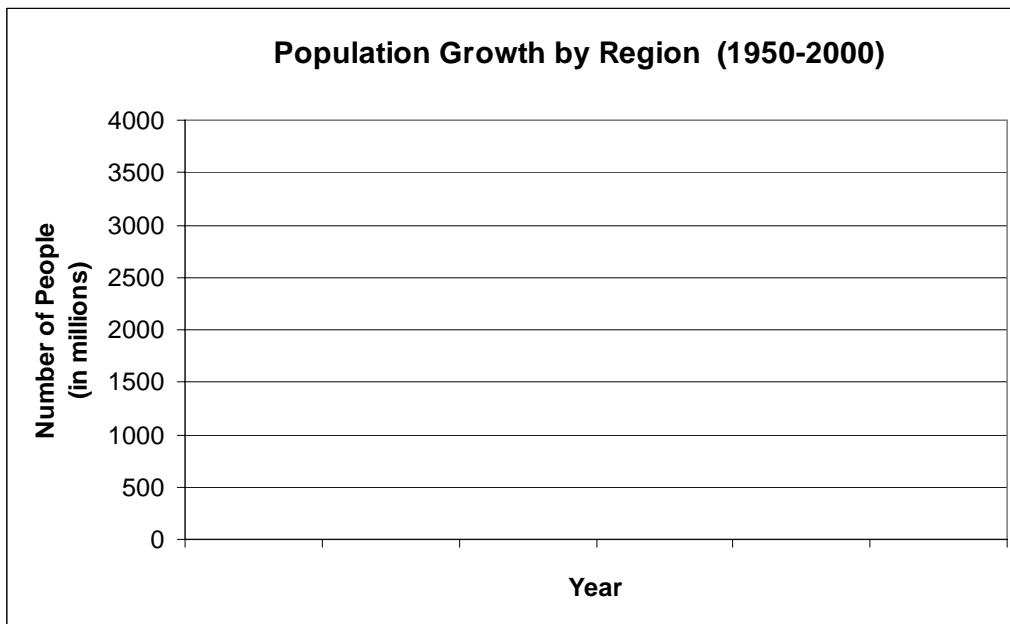
Writing for a Purpose: Constructing Graphs

GEOGRAPHY CGR 4E (Population Growth)

Graph II



Graph III



Reading Different Text Forms: **Tables**

GEOGRAPHY CGR 4E (Impairment of the Great Lakes)

Graphical text forms are intended to communicate information in a concise format and illustrate how one piece of information is related to another. Providing students with an approach to reading graphical text also helps them to become effective readers.

Purpose

- Become familiar with the elements and features of graphical texts and tables.
- Explore a process for reading graphical texts, using a range of strategies for before, during, and after reading.
- Become familiar with human impacts on the environment.

Payoff

Students will:

- become more efficient at ‘mining’ graphical texts for information and meaning.
- practise essential reading strategies and apply them to different course-related materials.
- become familiar with human impacts on the Great Lakes.

Tips and Resources

- This activity is tied to the CGR 4E expectations related to ‘*explaining how human use of the earth and its resources has positive and negative impacts on natural and human systems*’, and the CGR 4E Profile activity tied to the human impact on the natural systems.
- Sometimes a complicated idea or concept can be communicated more easily using a table. Tables are a specific form of chart that organizes data or information into specific parts or categories. This allows for easy reference. Information is presented in rows and columns. Some features include:
 - Print features (e.g., size of type, titles, headings, sub-headings, labels).
 - Design features (e.g., column and row format, borders, boxes).
- A table provides information, such as a list of statistics on a specific subject in order to:
 - Represent information visually.
 - Organize and summarize information for comparison or classification.
 - List or organize information for quick reference.
 - Show relationships within a group of statistics or among groups.
- Tables are frequently used in Geography, along with other forms of graphical texts, to support written material to help the reader quickly grasp key information (e.g., numbers patterns, populations, immigrant patterns, movement of people over time).
- See the following resources:
 - Student Resource - *Think Literacy: Cross-Curricular Approaches, Grades 7-9, Subject-Specific Examples, Geography, Grade 8*, pg 53, *Tips for Reading Graphical Texts (Tables)*.
 - Teacher Resource – *Concept Formation / Open Word Sort*.
 - Student/Teacher Resource - *Impairment of the Great Lakes - Type of Impairment by Lake*.
 - Student Resource – *Reading a Table - Impairment to the Great Lakes*.

Further Support

- Provide students with an organizer to guide them as they read a particular text. This might be a series of prompts to guide them through the reading task.
- Use the USEPA and the Government of Canada, *The Great Lakes: An Environmental Atlas and Resource Book*, 1995; also available online at www.epa.gov/glnpo/atlas.
- *Beyond Monet*, pp 188-273.

Reading Different Text Forms: **Tables**

GEOGRAPHY CGR 4E (Impairment of the Great Lakes)

Notes

| What teachers do | What students do |
|---|---|
| <p>Before</p> <ul style="list-style-type: none"> • Use the Teacher Resource, <i>Concept Formation/Open Word Sort</i> to activate prior knowledge, to engage students in the content, and to determine what they know about pollutants in the Great Lakes. • Make a transparency of the Student/Teacher Resource, <i>Impairment of the Great Lakes</i> and provide the students with a printed copy as well. • Preview the table, noting and highlighting or labeling the features and information provided. Using the information in the table, form questions and responses, to model how to interpret the data, such as: <ul style="list-style-type: none"> - What does the title tell me? - What are the headings? - Are there subheadings? - What do the numbers mean? | <ul style="list-style-type: none"> • Actively participate in the Word Sort activity. Students share and discuss their groupings with the class. Use a strategy such as Think Aloud to make sure that students are familiar with the terms. • Become familiar with the types of impact of pollutants on the Great Lakes. • Follow along; make notes on key terms that are new to them and label appropriately on their copies of the table. |
| <p>During</p> <ul style="list-style-type: none"> • Begin 'reading' the table, extracting key information about the impairment of the Great Lakes. • Emphasize the method of reading a table by reinforcing earlier discussions. • Begin making comparisons between statistics by asking questions, such as those included on the Student/Teacher Resource – <i>Reading a Table – Impairment of the Great Lakes</i>. | <ul style="list-style-type: none"> • Review the handout/overhead <i>Tips for Reading Graphical Texts (Tables)</i>. • Listen and observe the modeling, and then repeat the strategy themselves using the Student/Teacher Resource- <i>Reading a Table – Impairment of the Great Lakes</i>. • Ask questions to clarify understanding. |
| <p>After</p> <ul style="list-style-type: none"> • Have students use the Take Five strategy to compare the results of their answers. • As a class, discuss and review the strategies for reading tables. Invite students to share their thoughts and new understandings with the class. • Continue to study the location and consequences of water pollution in the Great Lakes Basin by using <i>The Great Lakes: An Environmental Atlas and Resource Book, 1995</i>. | <ul style="list-style-type: none"> • Become familiar with some strategies for reading tables, and share their insights with the class. • Identify the impaired sites in more detail and compare them to a map showing population distribution within the Great Lakes. • Continue to study the location and consequences of pollution in the Great Lakes. |

Reading Different Text Forms: Tables

GEOGRAPHY CGR 4E (Impairment of the Great Lakes)

Teacher Instructions

Unit 3 of the course profile for CGR 4E focuses on analyzing problems associated with waste creation and management. The Great Lakes provide many opportunities for hands-on examples of management of the environment. An excellent resource for a study of the Great Lakes environment is *The Great Lakes: An Environmental Atlas and Resource Book*, 1995. This book is also available on line at www.epa.gov/glnpo/atlas. All materials may be copied for class room use.

Concept Attainment / Word Sort

This is an ideal way to introduce a new topic, to encourage students to discuss the course content, or to diagnose the knowledge base of students.

1. Students work in groups of 2-3. Make enough copies of the word sheet for the appropriate number of groups in your classroom.
2. Cut words apart and place them in envelopes.
3. Place students in groups and provide each group with an envelope.
4. Students should spread words out over the desks, familiarize themselves with all words or phrases, and discuss any they are not sure about.
5. Students should then organize the words into groups. An 'open' word sort means that you do not assign headings for groupings for the words. Students create their own groupings and headings. A 'closed' Word Sort takes place when students are assigned groupings and headings and asked to place terms/phrases under the most appropriate headings. Students should be encouraged to manipulate and move words between categories.
6. Students then share their groupings with the class. Ask students to randomly share their groupings through a class discussion, or a summary on poster paper, or send one group member on a 'walk about' to identify differences and similarities with their own group's categories.

Reading a Table

1. Refer to the *Think Literacy: Cross-Curricular Approaches, Grades 7-9, Subject-Specific Examples, Geography, Grade 8*, pg 53, *Tips for Reading Graphical Texts (Tables)* and use a Think-Aloud strategy to model how to read a table.
2. Have students complete the questions using the table.
3. When completed, have the students use the Take Five strategy to compare their answers. An explanation of Take Five is found in *Think Literacy: Cross-Curricular Approaches, Grades 7-12*, pp 154-155.



Teacher Resource

Reading Different Text Forms: Tables

GEOGRAPHY CGR 4E (Impairment of the Great Lakes)

Concept Formation/Word Sort

Before doing this exercise, teachers should, with student participation, extend vocabulary by creating a word wall. (See *Think Literacy Cross-Curricular Approaches Grades 7-12*, pages 30-33.) Following this vocabulary discussion, students are to organize the statements into four groups using the headings: *Human Health, Human Use, Fish and Wildlife Habitat, Ecological Health, and Reproduction*.

| | |
|--|--|
| Degradation of fish and wildlife populations | Fish tumors and other deformities |
| Degradation of phytoplankton and zooplankton | Restrictions on fish and wildlife consumption |
| Undesirable algae / eutrophication | Impact on fish and wildlife habitat |
| Bird or animal deformities or reproduction problems | Beach closings (bacteria) |
| Degradation of benthic populations | Tainting of fish and wildlife flavor |
| Restrictions on dredging | Taste and odour in drinking water |
| Degradation of aesthetics | Added costs for agriculture or industry |

Source: USEPA and the Government of Canada, *The Great Lakes: An Environmental Atlas and Resource Book*, 1995.



Reading Different Text Forms: Tables
GEOGRAPHY CGR 4E (Impairment of the Great Lakes)

Impairment of the Great Lakes - Type of Impairment by Lake

Table with 6 columns: Type of Impairment, Lake Superior, Lake Michigan, Lake Huron, Lake Erie, Lake Ontario. Rows include categories like Ecological Health and Reproduction, Human Health, Human Use (welfare), and Fish and Wildlife Habitat.

Source: USEPA and the Government of Canada, The Great Lakes: An Environmental Atlas and Resource Book, 1995

Terms to review: impaired, degradation, benthic, eutrophication, phytoplankton, zooplankton, dredging, aesthetics.



Student Resource

Reading Different Text Forms: Tables

GEOGRAPHY CGR 4E (Impairment of the Great Lakes)

Reading A Table - Impairment of the Great Lakes

| Literacy Strategy | Question | Answer |
|---------------------|--|--------|
| Ask Questions | 1. What does the title of the table tell me? | |
| Ask Questions | 2. What do the headings tell me? | |
| Ask Questions | 3. Are there any subheadings? What do they mean? | |
| Understand the Text | 4. What do the numbers in the table mean or represent? How do I know this? | |
| Make Inferences | 5. What information, comparisons, trends, patterns, or change over time, can I read from the table? | |
| Make Inferences | 6. What conclusions can I draw about the Great Lakes basin from the information contained in this table? | |
| Make Connections | 7. How could the information in this table be used to determine what needs to be studied next so that one can better understand the full extent of the impairment of the Great Lakes? | |

Engaging in Reading: Reading Maps

GEOGRAPHY CGR 4E (Biomes)

Graphical text forms are intended to communicate information in a concise format and illustrate how one piece of information is related to another. Providing students with an approach to reading graphical text also helps them to become effective readers.

Purpose

- Become familiar with the elements and features of graphical texts used in any geography course.
- Explore a process for reading graphical texts, using a range of strategies for before, during, and after reading.
- Become familiar with and compare major world biomes.

Payoff

Students will:

- become more efficient at 'mining' graphical texts for information and meaning.
- practise essential map reading strategies and apply them to different courses.

Tips and Resources

- Maps are visual representations of places or things (e.g., the surface of the earth or of planets, or routes), or the components of things or landscapes. They show the what 'and' 'where' for a set of data at a specific time.
- Students should be aware of the purpose of mapping in general (i.e., to place information in a spatial context and in relation to themselves, (and the specific task at hand).
- While learning to read maps is begun at the elementary level, skill development continues into grade 9 and beyond. Diagnostic assessment is necessary for teachers before working with students. Generally map reading should be taught in the first units of study and revisited in each subsequent unit.
- Review the Student Resource, *Tips for Visual Literacy – Reading Maps Organizer* in the *Think Literacy: Cross Curricular Approaches, Grades 7-9, Subject-Specific Examples, Geography, Grade 9 Applied* pg. 36. and *Academic* pp. 4-5. This guide can be used and modeled over several lessons, and units within the course.
- Pre-teach, or review:
 - Types of maps (e.g., thematic, general purpose, topographic).
 - Conventions of map reading (e.g., title, scale, direction).
 - Vocabulary and / or concepts associated with the map reading exercise.
- Student Teacher Resource – *Anticipation Guide*.
- Student/Teacher Resource – *Tips for Visual Literacy – Reading Maps Organizer*.
- Student Resource – *Understanding Global Biomes (Part A and B)*.

Further Support

- Provide students with an organizer to guide them as they read a particular text. This might be a series of prompts to guide them through the reading task.
- Any atlas, many textbooks, and numerous websites contain maps of the world's biomes (you may need to use a map which shows Natural Vegetation regions). Two examples of web sites are: www.blueplanetbiomes.org/world_biomes.htm and www.worldbiomes.com/biomes_map.htm.
- See the *Think Literacy Document-Subject Specific Examples, Geography Grades 7-9* for additional information.



Engaging in Reading: Reading Maps

GEOGRAPHY CGR 4E (Biomes)

Notes

| What teachers do | What students do |
|--|---|
| <p>Before</p> <ul style="list-style-type: none"> • Prepare copies of the <i>Anticipation guide</i>. • Make an overhead transparency of a course-related map, or use an atlas map of Canada's Biomes/Ecosystems to model the process of reading maps. • Prepare questions using the <i>Tips for Reading Maps</i> in <i>Think Literacy: Cross-Curricular Approaches, Subject-Specific Examples, Grades 7-9, Geography, Grade 9 Academic</i>, pp. 4-5. • Locate appropriate maps of biomes, and climate and population distribution. Locate appropriate written text on the characteristics of biomes. • Prepare transparencies and copies of <i>Tips for Visual Literacy – Reading Maps Organizer</i>. | <ul style="list-style-type: none"> • Complete the Anticipation Guide individually. • Use Think/Pair/Share to discuss individual answers and to determine terms that need to be explained. • Preview a Natural Vegetation or Biome/Ecosystem map of Canada and note strategies that others use to preview a map. |
| <p>During</p> <ul style="list-style-type: none"> • Preview the map of Canada's Biomes or Natural Vegetation regions with the class using Think Aloud, noting the features of the map including the title, legend, symbols, colours, and patterns. • Model rereading the map and asking questions using the Student Teacher resource <i>Tips for Visual Literacy organizer</i>. | <ul style="list-style-type: none"> • Listen and observe the teacher modeling on how to read a map effectively. Create their own organizer based on the teacher's class example. • Identify the key terms from the literacy strategy section of the organizer, and ask questions about reading maps. • Ask questions about the map and seek clarification when necessary. |
| <p>After</p> <ul style="list-style-type: none"> • Ask students to read another course-related map and complete an organizer – use a map of world biomes. • Have students work with partners to compare organizers. Students should use partners' ideas to add to their own organizer. • As a class, discuss the importance and use of map reading skills. • Ask students to correlate maps of biomes, climate, and population distribution and read textual information on the biomes in order to complete a written comparison of the biomes. | <ul style="list-style-type: none"> • Read the world map of Biomes / Natural Vegetation and complete notes to record important information. Correlate this map to climate and population distribution maps. • Read text information on each of the biomes and complete an organizer comparing the world biomes. • Use other students' notes to add to their own. • Identify map reading strategies and resources to use in the future. |



Engaging in Reading: Reading Maps

GEOGRAPHY CGR 4E (Biomes)

Anticipation Guide – Reading a Map of Global Biomes

- Read each of the statements below and circle 'Agree' or 'disagree' beside each statement before you read the information.
- Following our class discussion of these statements, you will read the information provided by the biome map, noting the page numbers that are related to each statement.
- When you have finished reading, consider the statements again based on any new information you may have read. Circle 'Agree' or "Disagree" beside each statement and check to see whether your opinion has changed based on new evidence.

| Before Reading | Statements | After Reading |
|---------------------|--|------------------|
| 1. Agree / Disagree | There is very little diversity in biomes in Canada and globally. | Agree / Disagree |
| 2. Agree / Disagree | The largest biome in Canada, by area, is the Boreal / Taiga Forest. | Agree / Disagree |
| 3. Agree / Disagree | The continent of Africa is dominated by Tropical Savanna and Grasslands. | Agree / Disagree |
| 4. Agree / Disagree | The biome that we live in is the Temperate Grasslands. | Agree / Disagree |
| 5. Agree / Disagree | The continent with the greatest diversity of biomes is South America. | Agree / Disagree |
| 6. Agree / Disagree | Major biome regions are the same as major vegetation regions. | Agree / Disagree |
| 7. Agree / Disagree | The biome likely to show the least human impact is the Tundra. | Agree / Disagree |



Engaging in Reading: Reading Maps

GEOGRAPHY CGR 4E (Biomes)

Tips for Visual Literacy – Reading a Map Organizer

Answer the following questions when reading a map.

| Literacy Strategy | Question |
|---------------------|--|
| Ask Questions | <i>1. What is the title of the map?</i> |
| Ask Questions | <i>2. Identify the topic of the map.</i> |
| Make Inferences | <i>3. What is the purpose of the map?</i> |
| Understand the Text | <i>4. Identify the patterns that you see on the map.</i> |
| Make Inferences | <i>5. What do you think the patterns mean?</i> |
| Make Connections | <i>6. Where is the location of the map?</i> |
| Make Connections | <i>7. Where do you live on the map?</i> |
| Visualize | <i>8. Choose any region of the map, and visualize it. Describe what you might see there.</i> |
| Make Inferences | <i>9. Choose one region name, and explain what you think it means.</i> |
| Make Inferences | <i>10. Choose one region and explain what might influence its location.</i> |

Source: *Think Literacy: Cross Curricular Approaches, Grades 7-9, Subject-Specific, Geography, Grade 9 Applied*, pg 36.



Engaging in Reading: Reading Maps

GEOGRAPHY CGR 4E (Biomes)

Understanding Global Biomes

In order to answer the following questions you will need an atlas which contains global biome, climate, and population distribution maps.

Your task is to look at the patterns on each map, correlate the maps, and then answer the questions below.

Part A: Read map(s) and record your answers to the following questions.

- 1. Which biome covers the greatest land area?**
- 2. Which continent has the greatest diversity in biomes?**
- 3. Which continent has the least diversity in biomes?**
- 4. How does the continent of North America compare to the other continents in regards to number, size and location of biomes?**
- 5. Which biome do we live in?**
- 6. Which biome is likely to be the least disturbed by human activity?**
Why?
- 7. Select one biome and explain why you think it is named as it is.**
- 8. Select a different biome and explain why it is the size and shape that it is and suggest why it is located in that particular place.**



Student Resource

Engaging in Reading: Reading Maps

GEOGRAPHY CGR 4E (Biomes)

Understanding Global Biomes

Part B: Use an organizer to compare the characteristics of 5 of the major biomes.

| Biome | Location | Climate | Dominant vegetation type | Human Activity |
|-------|----------|---------|--------------------------|----------------|
| 1. | | | | |
| 2. | | | | |
| 3. | | | | |
| 4. | | | | |
| 5. | | | | |

Writing for a Purpose: Using Templates for Photographs

GEOGRAPHY CGR 4E (Local Environmental Issue)

Graphical text forms (e.g., diagrams, photographs, drawings, sketches, graphs, schedules, maps, charts, tables, and timelines) are intended to communicate information in a concise format and illustrate how one piece of information is related to another. Providing students with an approach to producing graphical text and reading graphical text also helps them to become effective readers.

Purpose

- Become more familiar with the elements of graphical texts used in any geography course.
- Explore a process for writing and reading graphical texts, using a range of strategies for before, during, and after reading.

Payoff

Students will:

- become more efficient at taking and writing about photos.
- practice essential writing skills and apply them to different course-related materials.

Tips and Resources

- The CGR 4E profile suggests that students produce an action plan for rehabilitating a local environment or managing an existing local resource in a sustainable way. The action plan should include the identification of the problem, *collection of data illustrating the problem* and researched possible solutions.
- Photos can be used to communicate ideas or concepts more easily than words. Taking and analyzing photographs can help students to better understand what the issues are.
- As teachers, trying to integrate technology into your classrooms, pictures can be a valuable part of preparing materials and engaging students in interpreting and analyzing what is going on in the community.
- With the increased use of digital cameras it becomes easier for students to collect information and write about 'real world' issues in their home communities. The expectations and the Course Profile increasingly place emphasis on the use of technology.
- Students should be encouraged to produce their own visuals in order to avoid the issue of plagiarism.
- Take a sequence of photos over time. Include all the steps as change occurred. Have the students predict what will happen next.
- Take a sequence of photos by standing in the same spot and taking a series of photos from the same vantage point. Have the students predict what will come next in the sequence.
- Student/Teacher Resources:
 - *Tips for Visual Literacy – Taking Photographs.*
 - *Tips for Visual Literacy – Image Organizer.* This guide can be used and modeled over several lessons, and units within the course.
- Student Resource
 - *A local environmental concern.*
 - *Organizer for Photo Analysis – Local Environmental Concern.*

Further Support

- The template for any individual writing assignment can be revised to make the modifications or accommodations necessary for students with special needs. For example, create different expectations for research.



Writing for a Purpose: Using Templates for Photographs

GEOGRAPHY CGR 4E (Local Environmental Issue)

| What teachers do | What students do |
|--|---|
| <p>Before</p> <ul style="list-style-type: none"> • Become familiar with digital cameras, computer software, and curriculum expectations and prepare hands-on demonstrations. • Set up rules and a system for managing digital images. • Check with your computer site specialists to see if there is a tutorial you can have students complete to work with the manipulation of digital images (e.g., cropping, lightening, darkening, and special effects). • Copy the <i>Student Resource</i> sheets. • Prepare transparencies of these resources. | <ul style="list-style-type: none"> • Select a topic for their summary activity and have them collect relevant information, data, and photographs. |
| <p>During</p> <ul style="list-style-type: none"> • Help students understand basic rules of taking effective photos. • Thoroughly instruct the students on the use of digital camera. Allow for a hands-on demonstrations as well as student practice using the cameras in class before they leave the school. • Teach/assist students with use of programs for the presentation of photos and information. • Walk students through the photo interpretation by completing the analysis of the first photo with them. Fill in information on the <i>Organizer for Photo Analysis</i>. • Organize the students into pairs. Use Think/Pair/Share to complete the photo analysis for photos 2 and 3. | <ul style="list-style-type: none"> • Actively participate in demonstration of using a digital camera. • Complete the think/pair/share activity about photograph analysis. • Arrange to take photos for their own individual assignment. |
| <p>After</p> <ul style="list-style-type: none"> • Monitor use of cameras. • Book computer time so students can work with, and prepare, an analysis of their photographs. • Assist students with completing an analysis of their photographs for their summary assignment. | <ul style="list-style-type: none"> • Take images of their chosen site of concern. • Complete an analysis of their photograph-taking capabilities and prepare an organizer that outlines the purpose of their photograph and the story it tells. • Use their photographs in their final summary activity. |

Notes



Writing for a Purpose: Using Templates for Photographs

GEOGRAPHY CGR 4E (Local Environmental Issue)

Tips for Visual Literacy – Taking Photographs

Often photographs can communicate ideas or concepts more easily than words. They capture a moment in time and tell stories the same way a writer does with words. The combination of a photo with written text can provide a reader with a more meaningful context than what can be achieved only through text. It is important that students be well versed in how to take effective photos.

Tips for Taking Photographs

Part A - the Content

Photographers make choices when they create their images. Besides the image itself, what is left out may also be important.

As a photographer and geographer before you take an image you must determine:

- who will be looking at your photo (audience);
- what you would like to say (narrate, explain, describe, persuade);
- consider the angle or perspective from which the photo is taken;
- consider the centre of focus (where you want your reader to look first);
- what to include and what to eliminate from the photo;
- if you will alter or adjust the photo.
-

Source: *Think Literacy: Cross Curricular Approaches, Grades 7-9, Subject-Specific Examples, Geography, Grade 8*, pg 64.

Part B - the Photograph

Consider the following when taking top quality photographs that will be used to record and to write about an event or area.

1. Think about what you want to portray.
2. Look at your subject directly.
3. Watch the light – lighting is important.
4. Use a flash, even outdoors – know your flash’s range.
5. Use a plain background.
6. Include some foreground.
7. Take some horizontal and some vertical photographs.
8. Try to shoot at different angles.
9. Shoot off center for effect.
10. Get close shots.
11. Be creative.

Adapted from Kodak’s 10 top techniques to taking better photographs.



Writing for a Purpose: Using Templates for Photographs

GEOGRAPHY CGR 4E (Local Environmental Issue)

Tips for Visual Literacy – Image Organizer

| Literacy Strategy | Question |
|--------------------------|--|
| Ask Questions | <i>1. Identify the image.</i> |
| Ask Questions | <i>2. What do you know about the image from looking at it?</i> |
| Make Inferences | <i>3. Where might the image be located?</i> |
| Ask Questions | <i>4. What is the issue or topic of the image?</i> |
| Make inferences | <i>5. Who might be involved?</i> |
| Make inferences | <i>6. What might have caused the issue?</i> |
| Make Connections | <i>7. Who might use this image, and what would they use it for?</i> |
| Make Connections | <i>8. What would you use this image for in Geography?</i> |

Source: *Think Literacy: Cross-Curricular Approaches, Grades 7-9, Subject-Specific Examples, Geography, Grade 9 Applied*, pp. 50-52.



Writing for a Purpose: Using Templates for Photos

GEOGRAPHY CGR 4E (Local Environmental Issue)

A local environmental concern

Photo 1



Photo 2



Photo 3





Student Resource

Writing for a Purpose: Using Templates for Photographs

GEOGRAPHY CGR 4E (Local Environmental Issue)

Organizer for Photo Analysis – Local Environmental Concern

| Question | Photo 1 | Photo 2 | Photo 3 |
|---|---------|---------|---------|
| 1. Identify the image | | | |
| 2. What do you know about the image from looking at it? | | | |
| 3. Where might the image be located? | | | |
| 4. What is the issue or topic of the image? | | | |
| 5. Who might be involved? | | | |
| 6. What might cause the issue? | | | |
| 7. Who might use this image, and what would they use it for? | | | |
| 8. What would you use this image for in Geography? | | | |
| In your opinion, which photo best tells the story of the environmental issue and why? | | | |

Engaging in Reading: Reading Between the Lines (Inferences)

GEOGRAPHY CGR 4E (Reading Visuals)

Making inferences from words that are read or spoken is a key comprehension skill. This can also be applied to graphics and photographs. Students may miss vital information if they fail to make appropriate inferences.

Purpose

- Draw meaning from text and visuals – through explicit details and implicit clues.
- Connect prior knowledge and experiences to the text/visuals in order to make good guesses about what is happening, may have happened, or will happen in the future.

Payoff

Students will:

- develop greater awareness that texts can be understood on more than one level.
- become capable and confident in comprehending the subtle meanings in texts.

Tips and Resources

- Explicit details appear right in the text/visual (e.g., names dates, descriptive details, facts). Implicit details are implied by clues in the text/visual. Readers are more likely to recognize implicit details if they relate to prior knowledge and experiences.
- Inferences are conclusions drawn from evidence in the text or reasoning about the text.
- Encourage students to make inferences by providing sentence starters similar to the following:
 - I realize that
 - Based onI predict that....
 - I can draw these conclusions
 - Based on this evidence, I think....
- For more information see:
 - *Think Literacy: Cross-Curricular Approaches, Grades 7-12*, pp 40-43.
 - Student/Teacher resource, *Reading Between the Lines to Infer Meaning*.
 - Student resource, *Reading a Photograph to Infer Meaning*.

Further Support

- Provide additional opportunities for students to practise making inferences with subject-specific texts in a supported situation – perhaps in a small group with the teacher acting as the facilitator.
- Provide students with opportunities to apply the same procedure to political cartoons.



Engaging in Reading: Reading Between the Lines (Inferences)

GEOGRAPHY CGR 4E (Reading Visuals)

| What teachers do | What students do |
|--|--|
| <p>Before</p> <ul style="list-style-type: none"> Explain to students that some information is stated explicitly in the text or explicitly apparent in a cartoon/photograph. On the other hand, sometimes readers must draw a conclusion about what is meant based on clues in the /cartoon/photo. This strategy is called ‘making inferences’ or good guesses, and is also referred to as “reading between the lines.” Prepare a transparency of the Student Resource, <i>Reading Between the Lines to Infer Meaning (Geography examples)</i>. Ask students to pick out the explicit information in the first item on the hand out, and then to infer meaning, or draw a conclusion about the statement. | <ul style="list-style-type: none"> Read the first item on the handout and pick out the explicit information. Make an inference about the meaning of the statement. |
| <p>During</p> <ul style="list-style-type: none"> Direct students to read the remaining examples. Engage the whole class in a discussion about the meaning to be inferred from each statement. Complete the same activity for a photograph. Model the first one with the class, and then have students complete several others on their own. | <ul style="list-style-type: none"> Infer meaning from the clues in each statement on the handout. Provide various interpretations of the situations described in each statement. Follow carefully the teacher’s directives on inferring information from a photograph. Transfer skills to other photographs. |
| <p>After</p> <ul style="list-style-type: none"> Help students to transfer the skill of inferring meaning by providing a sample of a subject-specific text, political cartoon, or photograph that requires them to make inferences. | <ul style="list-style-type: none"> Practise inferring meaning from the subject-area using text material, political cartoons, or photographs. |

Notes



Engaging in Reading: **Reading Between the Lines (Inferences)**

GEOGRAPHY CGR 4E (Reading Visuals)

Reading Between the Lines to Infer Meaning

(Thinking in a ‘geographic manner’ of course!)

Explain what you think might be happening in the following situations:

- 1. In a rainstorm, a car in front of you suddenly stops at a bridge. It turns and heads back towards you.**
- 2. An alpine skier quickly changes direction, skiing across the hill instead of down the slope.**
- 3. From your position on a dock on Lake Huron, you see a sailboat that set sail just 15 minutes ago quickly return to the harbour.**
- 4. A truck with building materials has driven slowly by your new house several times in the past 10 minutes.**
- 5. Your neighbour buys a 4-wheel drive vehicle in the spring.**
- 6. Days after a heavy rainfall, the beaches in Toronto are still closed to swimmers.**



Engaging in Reading: Reading Between the Lines (Inferences)

GEOGRAPHY CGR 4E (Reading Visuals)

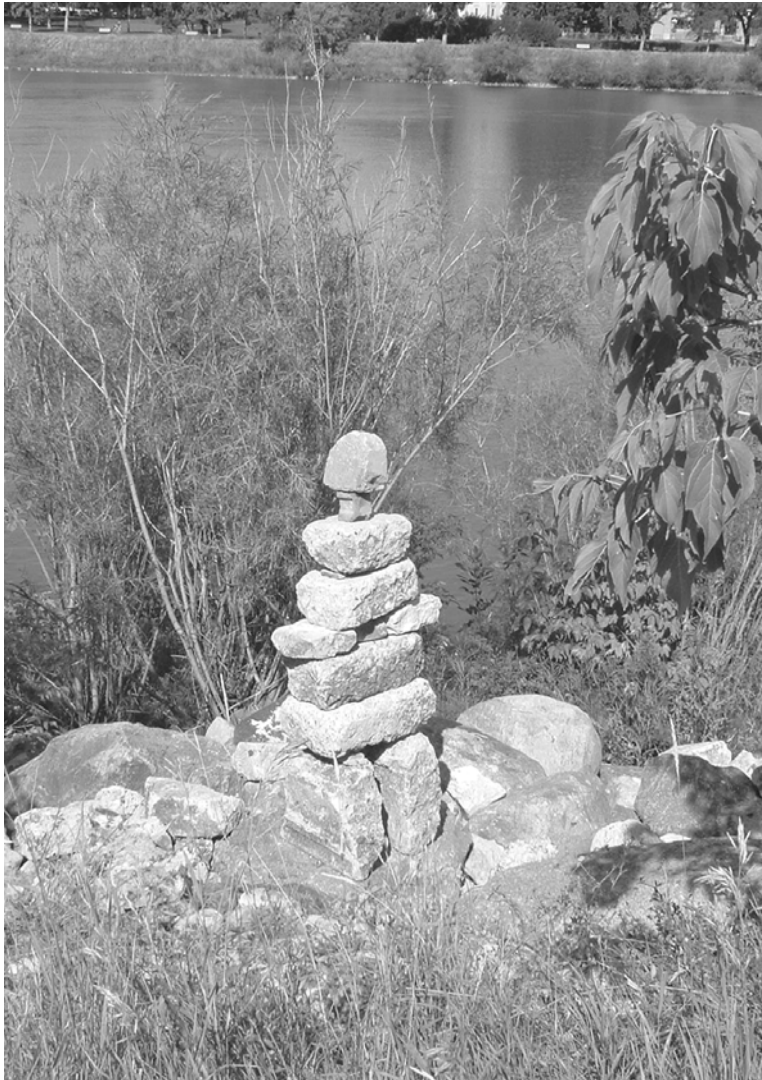
Reading to Infer Meaning – Interpreting Photographs

(Questions and considerations such as those included in this chart, may be used to walk students through an analysis of a photograph.)

| Question to be considered in analysis | Reason |
|---|---|
| Who is the intended audience? | <ul style="list-style-type: none"> - Consider the age, gender, and socio-economic status of the intended audience. - What is the nature of the text in which the photograph is found? |
| What graphic styles are used? | Photograph – What is the centre of focus, angle or perspective of the focus; what is not included in the photograph; what is altered or adjusted? |
| What is explicit in the photograph? | <ul style="list-style-type: none"> - Exactly what is shown in or portrayed by the photograph/cartoon? (Consider size of images, context of images, association of images to each other, words used.) |
| What is implied by the photograph? | <ul style="list-style-type: none"> - Make inferences from the type of information included and the manner in which the information is included. |
| What is the message of the photograph? | What do you think the intended purpose of the photographer was (e.g., narrative, explanative, descriptive, persuasive)? |
| How effectively is the message portrayed by this photograph? | Offer your opinion on the effectiveness of the message and support your opinion with facts from the photograph. |

Engaging in Reading: Reading Between the Lines (Inferences)

GEOGRAPHY CGR 4E (Reading Visuals)

Reading a Photograph to Infer Meaning

What is explicit in the photograph?

What is implied by the photograph?

What message is portrayed by this photograph?

How effectively is the message portrayed by this photograph?



Student Resource

Engaging in Reading: Reading Between the Lines (Inferences)

GEOGRAPHY CGR 4E (Reading Visuals)

Reading a Photograph to Infer Meaning



What is explicit in the photograph?

What is implied by the photograph?

What message is portrayed by this photograph?

How effectively is the message portrayed by this photograph?

Oral Communication: Pair Work – Think/Pair/Share

GEOGRAPHY CGR 4E (reviewing terms and concepts)

In this strategy, students individually consider a concept, question, or issue, and then discuss their ideas with a partner. This can be followed by small group discussions or a whole class discussion.

Purpose

- Encourage students to think about a concept, question, issue, or reading, and then refine their understanding through discussion with a partner.
- Engage students in an active review and discussion of key terms and concepts of the CGR 4E course.

Payoff

Students will:

- reflect on subject content.
- deepen their understanding of an issue or topic through clarification and rehearsal with a partner.
- develop skills for small group discussion, such as listening actively, disagreeing respectfully, and rephrasing ideas for clarity.

Tips and Resources

- Think/Pair/Share can be used in all areas of geographic studies and for a variety of purposes. It can be used to review terms, for concept attainment, to better understand a task, or to develop and express opinions on the subject matter.
- Use it to help students with their in-class reading. Ask them to read a passage, think about the ideas, and then take turns retelling the information to a partner.
- Use it at any point during a lesson, for very brief intervals, or in a longer time frame.
- This strategy can be used for relatively simple questions and for ones that require more sophisticated thinking skills, such as evaluating.
- Take time to ensure that all students understand the stages of the process and what is expected of them.
- Review the skills that students need to participate effectively in Think/Pair/Share, such as good listening, turn-taking, respectful consideration of different points of view, asking for clarification, and rephrasing.
- After students share in pairs, consider switching partners, placing 2 groups together and sharing, or whole-class sharing of ideas generated. Consider applying this tactic with higher order tasks, such as concept attainment and concept formation.
- *Think Literacy: Cross–Curricular Approaches, Grades 7-12*
- *Beyond Monet*, pp. 94, 105, 188-239.

Further Support

- Some students may benefit from a discussion with the teacher to articulate their ideas before moving on to share with a partner.
- Pairs should be monitored to ensure their accountability to the task.



Oral Communication: Pair Work – Think/Pair/Share

GEOGRAPHY CGR 4E (reviewing terms and concepts)

Notes

| What teachers do | What students do |
|--|---|
| <p>Before</p> <ul style="list-style-type: none"> Have students review homework, work from a previous class, or read a selection and prepare a topic, question, or prompt for a planned Think/Pair/Share activity. <p>OR</p> <ul style="list-style-type: none"> Choose a 'teachable moment' during the class where the process of reflection and shared discussion would bring deeper understanding, and insert a brief Think/Pair/Share activity into a lesson at that point. <p>In either case:</p> <ul style="list-style-type: none"> Consider the social and academic goals for the Think/Pair/Share activity, and plan for pairing of particular learners that would further those goals. Prepare questions, list of terms, data sets or find passage to be read. Prepare lists of partners/groups to be formed. | <ul style="list-style-type: none"> Complete homework, review previous class work, or read a chapter or section of their text book as assigned by the teacher. |
| <p>During</p> <ul style="list-style-type: none"> Ask students to think about the topic individually for several minutes. Write down their ideas. Set clear expectations regarding the focus of thinking and sharing to be done. Put students in pairs to share and clarify their ideas and understanding. Monitor students' dialogue by circulating and listening. | <ul style="list-style-type: none"> Practice good active listening skills when working in pairs, using techniques such as paraphrasing what the other has said, asking for clarification, and orally clarifying their own ideas. Formulate thoughts and ideas, writing them down as necessary to prepare for sharing with a partner. |
| <p>After</p> <ul style="list-style-type: none"> Call upon some pairs to share their learning and ideas with the whole class. Extend the Think/Pair/Share with a further partner trade, where students swap partners and exchange ideas again. Consider adding a journal writing activity as a follow-up to a Think/Pair/Share activity. Have students complete their own data sets and test them with a partner or the entire class. | <ul style="list-style-type: none"> Identify any information or concepts that are still unclear after the pair discussion, and ask the class and teacher for clarification. |



Oral Communication: **Pair Work – Think/Pair/Share**

GEOGRAPHY CGR 4E (reviewing terms and concepts)

Explanations of Strategies

1. **Examples of questions for Think/Pair/Share Resource** (See Student /Teacher Resource pg. 35.)
 - A list is provided of possible questions or statements that could be used at the start of a class to review class work or homework, or could be used throughout a lesson.
 - Any term, question, or concept could be used. Discussing the terms and concepts helps the student to identify any problems they are having with the content and to show that they do understand the work.
 - Students think about the question/statement on their own for several minutes, and then ask them to share their ideas with a partner. Following this, you can put the students into groups of 4 for further sharing and/or you can have a class discussion of ideas generated. Call on students randomly to share the ideas that they and their partner generated.

2. **Concept Attainment Resource** (Concept is “Sustainable”) -See Student Teacher/ Resource pg. 36.
 - Cover the statements on the transparency. Uncover the statements, one at a time. Students should read and then, without speaking, try to identify the concept or term on their own. After uncovering about half of the statements, stop and ask them to share their ideas with their partner. Can they identify the concept or term?
 - Uncover the remaining statements, one at a time, and allow the students to share with their partner any subsequent ideas about the term/concept. Ask them to finalize what they think the concept is.
 - Provide them with the testers. Do their ideas fit?
 - Randomly ask partners to share their ideas with the class.

3. **Visualizing Resource** – See Student /Teacher Resource pg. 37
 - Read a short passage or provide students with a term or concept and have them draw what they visualize or see in their minds. Model for them by sketching an example on the board.
 - After drawing a visual for each passage or term, have students share with their partner.
 - Discuss what was similar about their visualizations and be prepared to share with the class.



Teacher Resource

Oral Communication: **Pair Work – Think/Pair/Share**

GEOGRAPHY CGR 4E (reviewing terms and concepts)

Examples of using Think/Pair/Share to review course content

These questions address the expectations of the course and are examples that could be used for Think/Pair/Share at the beginning of, or during, a lesson.

1. **All households in Ontario should be limited to two bags of garbage weekly and should be subject to a user pay system.**
2. **In order to reduce the urban problems in Toronto, more rapid urban growth should be encouraged in cities like London, Sudbury and Kingston.**
3. **All municipalities should have laws limiting or prohibiting the use of pesticides and fertilizers on lawns.**
4. **Bottled water is just as safe, if not safer, than municipal water supplies.**
5. **When a chemical spill occurs, the company or person responsible should face a significant fine and perhaps even jail time.**
6. **Owning a vehicle is a ‘want’ and not a ‘need’.**
7. **North American’s standard of living is not a sustainable one.**
8. **The world’s oceans are an example of a carbon sink or carbon source.**
9. **We must focus on building new nuclear plants, rather than alternatives, in order to meet Ontario’s increasing demand for electricity.**
10. **State 4 pieces of evidence that could be used to support the global warming issue.**



Oral Communication: *Pair Work – Think/Pair/Share*

GEOGRAPHY CGR 4E (reviewing terms and concepts)

Concept Attainment

| IS | IS NOT |
|--|--|
| Using public transportation such as buses and trains | Use of water to irrigate lawns and golf courses |
| Using organic farming practices | Rapid population growth |
| Using alternative energy resources such as solar and wind | Clear cutting of forests |
| Showing significant knowledge of the supply and use of a resource | Drag nets and bottom trawlers used to catch cod or other fish species |
| A resource that will be available for future generations | Pollution of the Great Lakes from human waste and agricultural runoff |

Testers:

- **Creation of National Parks continues in Canada's north.**
- **There is an increasing demand for petroleum resources but very few new reserves are being explored and developed.**

Note to teacher: The concept being discussed here is the idea of 'sustainable'.



Student/Teacher Resource

Oral Communication: Pair Work – Think/Pair/Share

GEOGRAPHY CGR 4E (reviewing terms and concepts)

Practise Visualizing from Text Material

Read each of the following words or passages. Then record in the space the pictures that come into your mind based on the words or passages. Be prepared to share what you have sketched.

| Term / Text | Visualization |
|---|---------------|
| <p>Humans and other animals absorb oxygen, giving off carbon dioxide. Green plants absorb this carbon dioxide, producing more oxygen. Tropical rainforests play a major role in this process.</p> | |
| <p>The 3R's</p> | |
| <p>The GAIA Theory suggests that the earth is a giant living organism and that it is the various life forms themselves that regulate and maintain conditions necessary to sustain life as we know it.</p> | |
| <p>Preservation</p> | |