

The Global Climate **Grades 6 – 8**

(Activity 84, pp. 363 – 369 in 2006 edition of Project Learning Tree Activity Guide)

Subject Area: Science

Strand: Processes that Shape the Earth

Standard 1: The student recognizes that processes in the lithosphere, atmosphere, hydrosphere, and biosphere interact to shape the Earth.

Benchmarks:

- **Grades 6-8:** Knows how conditions that exist in one system influence the conditions that exist in other systems. [SC.D.1.3.3]

Standard 2: The student understands the need for protection of the natural systems on Earth.

Benchmarks:

- **Grades 6-8:** Know the positive and negative consequences of human action on the Earth's systems. [SC.D.2.3.2]

Strand: How Living Things Interact With Their Environment

Standard 2: The student understands the consequences of using limited natural resources.

Benchmarks:

- **Grades 6-8:** Knows that all biotic and abiotic factors are interrelated and that if one factor is changed or removed, it impacts the availability of other resources within the system. [SC.G.2.3.2]
- **Grades 6-8:** Understands that humans are part of an ecosystem and their activities may deliberately or inadvertently alter the equilibrium in ecosystems. [SC.G.2.3.4]

Strand: The Nature of Science

Standard 1: The student uses the scientific processes and habits of mind to solve problems.

Benchmarks:

- **Grades 6-8:** Know that scientific knowledge is subject to modification as new information challenges prevailing theories and as a new theory leads to looking at old observations in a new way. [SC.H.1.3.1]
- **Grades 6-8:** Knows that the study of the events that led scientists to discoveries can provide information about the inquiry process and its effects. [SC.H.1.3.2]

- **Grades 6-8:** Knows that accurate record keeping, openness, and replication are essential to maintaining an investigator’s credibility with other scientists and society. [SC.H.1.3.5]
- **Grades 6-8:** Knows that when similar investigations give different results, the scientific challenge is to verify whether the differences are significant by further study. [SC.H.1.3.7]

Standard 2: The student understands that most natural events occur in comprehensible, consistent patterns.

Benchmarks:

- **Grades 6-8:** Recognizes that patterns exist within and across systems. [SC.H.2.3.1]

Standard 3: The student understands that science, technology, and society are interwoven and interdependent.

Benchmarks:

- **Grades 6-8:** Knows that no matter who does science and mathematics or invents things, or when or where they do it, the knowledge and technology that result can eventually become available to everyone. [SC.H.3.3.6]
- **Grades 6-8:** Knows that computers speed up and extend people’s ability to collect, sort, and analyze data; prepare research reports; and share data and ideas with others. [SC.H.3.3.7]

Subject Area: Mathematics

Strand: Number Sense, Concepts, and Operations

Standard 3: The student understands the effects of operations on numbers and the relationships among these operations, selects appropriate operations, and computes for problem solving.

Benchmarks:

- **Grades 6-8:** Understands and explains the effects of additions, subtraction, multiplication, and division on whole numbers, fractions, including mixed numbers, and decimals, including the inverse relationships of positive and negative numbers. [MA.A.3.3.1]
- **Grades 6-8:** Selects the appropriate operation to solve problems involving addition, subtraction, multiplication, and division of rational numbers, ratios, proportions, and percents, including the appropriate application of the algebraic order of operations. [MA.A.3.3.2]

- **Grades 6-8:** Adds, subtracts, multiplies and divides whole numbers, decimals, and fractions, including mixed numbers, to solve real-world problems, using appropriate methods of computing, such as mental mathematics, paper and pencil, and calculator. [MA.A.3.3.3]

Strand: Measurement

Standard 2: The student compares, contrasts, and converts within systems of measurement (both standard/nonstandard and metric/customary).

Benchmark:

- **Grades 6-8:** Uses direct (measured) and indirect (not measure) measures to compare a given characteristic in either metric or customary units. [MA.B.2.3.1]

Strand: Algebraic Thinking

Standard 1: The student describes, analyzes, and generalizes a wide variety of patterns, relations, and functions.

Benchmarks:

- **Grades 6-8:** Describes a wide variety of patterns, relationships, and functions through models, such as manipulatives, tables, graphs, expressions, equations, and inequalities. [MA.D.1.3.1]
- **Grades 6-8:** Creates and interprets tables, graphs, equations, and verbal descriptions to explain cause-and-effect relationships. [MA.D.1.3.2]

Strand: Data Analysis and Probability

Standard 1: The student understands and uses the tools of data analysis for managing information.

Benchmarks:

- **Grades 6-8:** Collects, organizes, and displays data in a variety of forms, including tables, line graphs, charts, and bar graphs, to determine how different ways of presenting data can lead to different interpretations. [MA.E.1.3.1]

Standard 3: The student uses statistical methods to make inferences and valid arguments about real-world problems.

Benchmarks:

- **Grades 6-8:** Formulates hypotheses, designs experiments, collects and interprets data, and evaluates hypotheses by making inferences and drawing conclusions based on statistics (range, mean, median, and mode) and table, graphs, and charts. [MA.E.3.3.1] ▲
- **Grades 6-8:** Identifies the common uses and misuses of probability and statistical analysis in the everyday world. [MA.E.3.3.2]

Subject Area: Social Studies

Strand: Time, Continuity, and Change (History)

Standard 1: The student understands historical chronology and the historical perspective.

Benchmarks:

- **Grades 6-8:** Understands how patterns, chronology, sequencing (including cause and effect), and the identification of historical periods are influenced by frames of reference. [SS.A.1.3.1]
- **Grades 6-8:** Knows the relative value of primary and secondary sources and uses this information to draw conclusions from historical sources such as data in charts, tables, graphs. [SS.A.1.3.2]

Standard 3: The student understands Western and Eastern civilization since the Renaissance.

Benchmarks:

- **Grades 6-8:** Knows how physical and human geographic factors have influenced major historical events and movements. [SS.A.3.3.3]

Standard 5: The student understands U.S. history from 1880 to the present day.

Benchmarks:

- **Grades 6-8:** Knows the causes and consequences of urbanization that occurred in the United States after 1880 (e.g., causes such as industrialization; consequences such as poor living conditions in cities and employment conditions). [SS.A.5.3.3]

Strand: People, Places, and Environments (Geography)

Standard 2: The student understands the interactions of people and the physical environment.

Benchmarks:

- **Grades 6-8:** Understands how the landscape and society change as a consequence of shifting from a dispersed to a concentrated settlement form. [SS.B.2.3.4]
- **Grades 6-8:** Understands the environmental consequences of people changing the physical environment in various world locations. [SS.B.2.3.6]
- **Grades 6-8:** Understands how the interaction between physical and human systems affects current conditions on Earth. [SS.B.2.3.9]

Strand: Government and the Citizen (Civics and Government)

Strand 2: The student understands the role of the citizen in American democracy.

Benchmarks:

- **Grades 6-8:** Understands the importance of participation in community service, civic improvement, and political activities. [SS.C.2.3.6]
- **Grades 6-8:** Understands current issues involving rights that affect local, national, or international political, social, and economic systems. [SS.C.2.3.7]

Strand: Production, Distribution, and Consumption (Economics)

Standard 1: The student understands how scarcity requires individuals and institutions to make choices about how to use available resources.

Benchmarks:

- **Grades 6-8:** Understands the variety of factors necessary to consider when making wise consumer decisions. [SS.D.1.3.3]

Subject Area: Language Arts

Strand: Reading

Standard 2: The student constructs meaning from a wide range of texts.

Benchmarks:

- **Grades 6-8:** Determines the main idea or essential message in a text and identifies relevant details and facts and patterns of organization. [LA.A.2.3.1]
- **Grades 6-8:** Identifies the author's purpose and/or point of view in a variety of texts and uses the information to construct meaning. [LA.A.2.3.2]
- **Grades 6-8:** Recognizes logical, ethical, and emotional appeals in texts. [LA.A.2.3.3]
- **Grades 6-8:** Locates, organizes and interprets written information for a variety of purposes, including classroom research, collaborative decision making, and performing a school or real-world task. [LA.A.2.3.5] ▲

Strand: Writing

Standard 2: The student writes to communicate ideas and information effectively.

Benchmarks:

- **Grades 6-8:** Writes text, notes, outlines, comments, and observations that demonstrate comprehension of content and experiences from a variety of media. [LA.B.2.3.1] ▲

- **Grades 6-8:** Uses electronic technology including databases and software to gather information and communicate new knowledge. [LA.B.2.3.4]

Strand: Listening, Viewing, and Speaking

Standard 1: The student uses listening strategies effectively.

Benchmarks:

- **Grades 6-8:** Listens and uses information gained for a variety of purposes, such as gaining information from interviews, following directions, and pursuing a personal interest. [LA.C.1.3.1] (*Applies only to Doing the Activity Part B Section 5, and if students use the auditory function for the Earth & Sky program.*)
- **Grades 6-8:** Acknowledges the feelings and messages sent in a conversation. [LA.C.1.3.3]

Standard 3: The student uses speaking strategies effectively.

Benchmarks:

- **Grades 6-8:** Asks questions and makes comments and observations that reflect understanding and application of content, process, and experiences. [LA.C.3.3.2]
- **Grades 6-8:** Speaks for various occasions, audiences, and purposes, including conversations, discussions, projects, and informational, persuasive, or technical presentations. [LA.C.3.3.3]

Strand: Language

Standard 2: The student understands the power of language.

Benchmarks:

- **Grades 6-8:** Distinguishes between emotional and logical argument. [LA.D.2.3.3]

Subject Area: The Arts: No applicable benchmarks in this subject area.

▲ Applies only to Enrichment activities.