

SUGGESTED TEACHING STRATEGIES

1. Ask students to research "wave" action and prepare a diagram for this action.
 2. Point out on a world map the oceans, seas and currents to be discussed: Atlantic, Pacific, Indian, Gulfstream, and Dead Sea.
 3. Locate on a map of North America, Niagara Falls and its position 15,000 years ago.
 4. Provide a diagram for labeling of artesian wells, springs and geysers.
 5. Demonstrate with a relative humidity table how wet and dry bulb thermometer readings are made.
 6. Follow weather forecasts in print or on TV. Keep records and evaluate.
 7. Obtain an inexpensive diffraction grating or glass prisms and demonstrate the spectrum.
 8. Acquaint students with weather map symbols.
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CONCEPTS AND TERMS TO LISTEN AND WATCH FOR

EARTH AXIS	WATERSPOUT
CLIMATE	HURRICANE
WINDWARD	DOLDRUMS
LEEWARD	FOG
RELATIVE HUMIDITY	SNOW
CONDENSATION	CRYSTAL
RAINBOW	GULFSTREAM
SPECTRUM	ARTESIAN WELL
GLACIER	SPRING
ICEBERG	WAVE
LAKES	WHIRLPOOL
CRATER LAKES	WATERFALL
MONSOON	TIDES
CYCLONE	CURRENT
TORNADO	GEYSER

QUESTIONS FOR THOUGHT, DISCUSSION AND FURTHER STUDY ?

1. Diagram the positions of the Earth and sun in summer and winter showing the sun's rays.
2. On a circle drawn to represent the Earth, label the various climatic zones.
3. Define relative humidity.
4. Relate the terms condensation and dew point.
5. Describe your position and the conditions enabling you to see a rainbow.
6. How do monsoons vary according to seasons?
7. What may happen to buildings near a tornado? Why?
8. How could the "eye" of a hurricane deceive someone caught in the storm?
9. How do doldrums and trade winds differ?
10. If fog is a cloud at ground level, what is "smog"?
11. What gives water its taste?
12. How do icebergs form?
13. Investigate and determine at least 3 evidences that the seas once covered land.
14. List at least 4 unusual facts about the Dead Sea.
15. Where is the deepest point in the Earth's oceans?
16. What causes tides?
17. Describe how a geyser forms.

..... CAREER OPPORTUNITIES

EARTH SCIENCE TEACHER	NAVIGATOR
METEOROLOGIST	ENVIRONMENTALIST
WEATHER RESEARCHER	HURRICANE HUNTER
WEATHERMAN IN ARMED FORCES	NATIONAL WEATHER SERVICE
WEATHER SQUADRON MEMBER	PILOT

G L O S S A R Y

- 1. ABSOLUTE HUMIDITY-quantity of water vapor in each unit volume of air.
- 2. ARTESIAN WELL-a well drilled deep until it reaches water, which is then forced up by underground pressure.
- 3. BASIN-area drained by a river.
- 4. BROOK-small stream.
- 5. CLIMATE-average weather.
- 6. CONDENSATION-the turning from a gas to a liquid.
- 7. CRYSTAL-geometrically formed fused mineral, sugar, etc.
- 8. CURRENT-continuous movement of a fluid.
- 9. CYCLONE-storm with rotating winds.
- 10. DEW-moisture condensed at ground level.
- 11. DOLDRUM-equatorial region with little wind.
- 12. EVAPORATION-the turning into vapor.
- 13. FOG-water vapor obscuring vision.
- 14. FUNNEL CLOUD-a cone shaped cloud.
- 15. GEYSER-natural eruption of water and steam.
- 16. GLACIER-broad, moving mass of ice.
- 17. GULF STREAM-a warm ocean current flowing from the Gulf of Mexico through the Florida Straits and northward into the Atlantic toward Europe.
- 18. HUMIDITY-water vapor in the air.
- 19. HURRICANE-tropical cyclone.
- 20. HURRICANE 'EYE'-the calm area in the center of the storm.
- 21. ICE-solid form of water.
- 22. ICEBERG-a piece of glacier that has broken off.
- 23. LAKE-inland body of water.
- 24. LAVA-molten volcanic rock.
- 25. MAGMA-molten rock deep in the earth, from which igneous rock is formed.
- 26. MONSOON-season of wind and rain in South Asia.
- 27. MONSOON WINDS-winds that change their direction with the season.
- 28. OCEAN-vast body of salt water.
- 29. PRECIPITATION-rain, snow, sleet, etc.
- 30. RAIN-water falling in drops from the clouds.
- 31. RAINBOW-a colored arc of sunlight refracted through raindrops.
- 32. RAIN GAUGE-and instrument used to measure rainfall.
- 33. RELATIVE HUMIDITY-amount of moisture in the air as compared with the amount that the air could contain at the same temperature, expressed as a percentage.
- 34. RIVER-large, natural stream of water.
- 35. RIVULET-small brook.
- 36. SEASON-quarter of the year beginning with winter, spring, summer, fall.
- 37. SEDIMENT-matter falling to the bottom of a body of liquid.
- 38. SNOW-rain frozen in flakes.
- 39. SNOWFLAKE-a single feathery crystal of snow.
- 40. SPRING-stream emerging from the earth.
- 41. STORM-violent weather.
- 42. STREAM-body of running water.
- 43. SUB-TROPICAL-region bordering on the tropical zone.
- 44. TEMPERATURE-relative heat.
- 45. THUNDER-the sound following lightning.
- 46. TIDE-periodic fluctuation of sea level.
- 47. TORNADO-violent whirlwind.
- 48. TRADE WIND-a wind that blows toward the equator from the northeast on the north side of the equator and from the southeast on the south side.
- 49. TROPICAL-very hot; sultry.
- 50. UNITED STATES WEATHER BUREAU-a division of the department of commerce that gathers data on weather conditions over the United States.
- 51. VOLCANO-mountain that ejects molten lava, rock, and steam.
- 52. WATER-colorless, tasteless liquid forming rain, rivers, etc.
- 53. WATERFALL-a stream or river that plunges over a wall of rock.
- 54. WATERSPOUT-tubelike column of air and water occurring over water.
- 55. WATER VAPOR-the gaseous state of water.
- 56. WAVE-ridge along the ocean's surface; undulation.
- 57. WEATHER-what the air or atmosphere is like at any time; the condition of the sky.
- 58. WEATHERMAN-a person who professionally forecasts the weather.
- 59. WHIRLPOOL-spinning body of water.
- 60. WIND-the motion of air over the earth.

Tell Me

WHY

TEACHER'S GUIDE



VOLUME II
WATER & WEATHER

SUGGESTED TEACHING STRATEGIES

1. Discuss why it is important to practice conservation.
2. Have the class examine what they throw away each day and how that affects the earth.
3. Discuss why it is important to have clean air and water.
4. Ask the class to try and figure out why stars twinkle.
5. Examine a weather report and determine how it would affect a nearby ecosystem.
6. Discuss why some trees lose their leaves and others do not.
7. Have the class determine where their drinking water comes from.
8. Discuss the principle of windmills.
9. Look at photos and maps to show the various worlds eco-systems. (e.g. desert, rainforests, mountains, swamps, etc.)
10. Man is considered a herbivore and a carnivore, name some other animals that eat plants and meat.

• • • • CONCEPTS AND TERMS • • • • TO LISTEN AND WATCH FOR:

ACID RAIN
ALTERNATIVE ENERGY
AMPHIBIANS
BIO-DIVERSITY
BIOMASS
BIOME
BIOSPHERE
CARBON DIOXIDE
CARNIVORE
DISTURBANCE CYCLE
ECOLOGY
ECOSYSTEMS ENERGY CYCLE
GLOBAL WARMING

GREENHOUSE EFFECT
HERBIVORE
OXYGEN
OZONE
OZONE HOLE
OZONE LAYER
PHOTOSYNTHESIS
POLLUTE
RECYCLING
RUNOFF
SOLAR CELL
WETLANDS

QUESTIONS FOR THOUGHT, DISCUSSION, AND FURTHER STUDY

1. What is the purpose of ecology?
2. Why should we care about ecology and the earth?
3. What would happen if the rainforests didn't exist?
4. Can you name some of the items that are used in everyday life that come from plants?
5. Why do we harness the wind?
6. How does the moon effect our environment?
7. Why does it flood in the city?
8. What would happen if the sun didn't shine?
9. Why is summer hotter than winter?
10. Where does it rain the most in the United States?

• • • CAREER OPPORTUNITIES • • •

ARCHITECT
BIOLOGIST
BOTANIST
CHEMIST
DESIGNER
ECOLOGIST
ENGINEER
ENTOMOLOGIST
ENVIRONMENTAL ENGINEER

ENVIRONMENTALIST
FARMER
GARDENER
HORTICULTURIST
MARINE BIOLOGIST
RECYCLE SPECIALIST
SCIENTIST
TEACHER

GLOSSARY

1. AGRICULTURE - The science or occupation of cultivating the soil, producing crops, and raising livestock.
2. AMAZON - River about 6436 kilometers long northern South America flowing from Peruvian Andes into Atlantic in northern Brazil.
3. ANTARCTICA - Body of land around the South Pole; plateau covered by great ice cap.
4. ASTRONOMY - The study of the Universe.
5. BACTERIA - Any of a group of single-celled microorganisms that live in soil, water, organic matter, or the bodies of plants and animals.
6. BIODIVERSITY - Biological variety in an environment as indicated by numbers of different species of plants and animals.
7. BIOME - Major type of ecological community.
8. BOTANY - The study of plant life.
9. BRAZIL - Country east & central South America; capital, Brasilia.
10. CARNIVORE - A flesh eating animal or plant.
11. CLIMATE - A region with specified weather conditions.
12. CONSERVATION - A careful preservation and protection of something.
13. CONTINENT - One of the great divisions of land (as North America, South America, Europe, Asia, Africa, Australia, or Antarctica) on the globe.
14. DECIDUOUS - falling off (as at the end of a growing period or stage of development).
15. DESERT - Dry land with few plants and little rainfall.
16. ECOLOGY - A branch of science concerned with the relationships between living things and their environment.
17. ECOSYSTEMS - A system made up of an ecological community and its environment especially under natural conditions.
18. ENERGY - The capacity (as of heat, light, or running water) for doing work.
19. ENVIRONMENT - The surrounding conditions or forces that influence or modify.
20. EQUATOR - An imaginary circle around the earth everywhere equally distant from the north pole and the south pole.
21. EROSION - To destroy gradually.
22. FERMENTATION - Chemical breaking down of an organic substance.

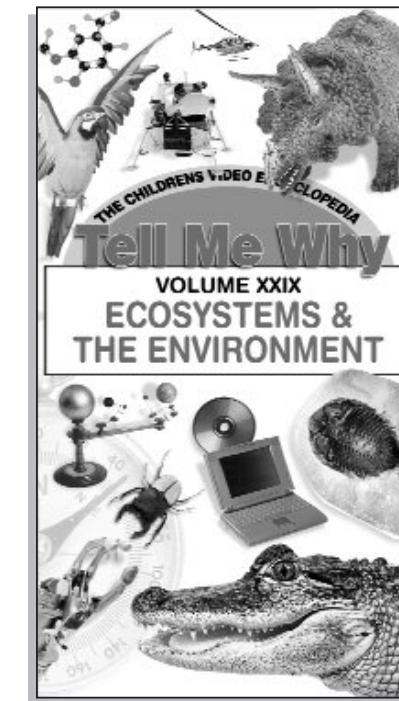
23. FOSSIL FUEL - Fuel (as coal, oil, or natural gas) that is formed in the earth from plant or animal remains.
24. FUNGUS - Any of a major group of flowerless plants (as molds, rusts, mildews, smuts, and mushrooms) that lack chlorophyll and are parasitic or live on dead or decaying organic matter.
25. GRASSLAND - Land covered with herbs (as grasses and clover) rather than shrubs and trees.
26. HABITAT - The place or type of place where a plant or animal naturally or normally lives or grows.
27. HAWAII - Group of islands central Pacific Ocean that is part of the United States
28. HERBIVORE - A plant eating animal.
29. INDIA - Subcontinent southern Asia south of the Himalayas between Bay of Bengal & Arabian Sea.
30. KELP - Any of various large brown seaweeds.
31. MINERAL - A naturally occurring substance (as ore, petroleum, or water) obtained usually from the ground.
32. NORTH POLE - The northernmost point of the earth.
33. ORGANISM - A living person, plant, or animal.
34. PHOTOSYNTHESIS - The process by which plants that contain chlorophyll make carbohydrates from water and from carbon dioxide in the air in the presence of light.
35. POLLUTE - To spoil (as a natural resource) with waste made by humans.
36. RECYCLING - To process (as liquid body waste, glass, or cans) in order to regain materials for human use.
37. SEA URCHIN - A class of invertebrate animals that are related to the starfish, live on or burrow in the sea bottom, and are covered with spines.
38. SIBERIA - A region in northern Asia.
39. SMOG - Thick haze caused by the action of sunlight on air polluted by smoke and automobile exhaust fumes [from smoke and fog].
40. SOLAR SYSTEM - A system of planets revolving around a star.
41. SOUTH POLE - The southernmost point of the earth.
42. SUB-TROPICAL - Of, relating to, or being the regions bordering on the

- tropical zone.
43. SWAMP - Wet spongy land often partly covered with water.
 44. TROPIC OF CANCER - The parallel of latitude that is 23 1/2 degrees north of the equator and is the northernmost latitude reached by the overhead sun.
 45. TROPIC OF CAPRICORN - The parallel of latitude that is 23 1/2 degrees south of the equator and is the southernmost latitude reached by the overhead sun.
 46. WEATHER - The state of the atmosphere in regard to heat or cold, wetness or dryness, calm or storm, clearness or cloudiness.
 47. WETLAND - Land or areas having much soil moisture.
 48. ZAIRE - Country central Africa consisting of most of Congo River basin east of lower Congo River; capital Kinshasa.

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Tell Me Why

TEACHER'S GUIDE



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VOLUME XXIX

ECOSYSTEMS AND THE ENVIRONMENT

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