

See What Science is All About ^{T.M.}

A pre-service/in-service video program for elementary teachers consisting of nine videotapes and comprehensive printed outline.

TOPICS:

K-3 PHYSICAL SCIENCE, Part 1 (1 hr. 8 min.)			
MATTER (34 min.) Physical properties The five senses Making approximations Safety Dissolving rates Particle model Identifying unknowns Making measurements - units, length, weight, volume Using the balance and graduated cylinder		MECHANICS (30 min.) Classifying by position and motion Reading coordinates Investigating motion and energy Friction Simple machines Levers - types, applications Inclined plane, wedge Wheel and axle Pulleys and gears	
K-3 PHYSICAL SCIENCE, Part 2 (1 hr. 5 min.)			
HEAT (8 min.) Sources of heat Use of thermometers, scientific methods Heat transfer by conduction Conductors and insulators	LIGHT (17 min.) Sources of light Transmission through different materials How a magnifier works Reflection and mirrors Shadows Colors - pigments, light	SOUND (19 min.) Sources of sound Nature of sound Intensity, frequency and pitch Relationship of length, tension and mass to pitch Simple instruments How vocal cords work Sound travels through matter Echoes How the ear works (safety)	MAGNETISM/ELECTRICITY (19 min.) Types of magnets What is a magnet? Testing materials Making magnets Interacting poles The earth's magnetic field The compass Field lines The nature of electricity Simple circuits Testing materials Electromagnets Magnetism vs. electricity Use of electricity and conservation Safety
4-6 PHYSICAL SCIENCE, Part 1 (1 hr. 43 min.)			
MATTER - Section 1 (36 min.) Safety The atom Reading the periodic table Elements, compounds, mixtures Filtering and using indicators Model for combining atoms Acids, bases and indicators pH	MATTER - Section 2 (31 min.) Weight of a gas Physical and chemical properties Chemical change Paper chromatography Density of solids, liquids and gases Preparing hydrogen Ratio of combining chemicals Preparing and testing carbon dioxide	MECHANICS (24 min.) Forms of energy Energy conversions Work Friction Power Gravity, mass and weight Laws of motion Potential and kinetic energy Speed	
4-6 PHYSICAL SCIENCE, Part 2 (1 hr. 34 min.)			
HEAT (24 min.) Expansion of solids, liquids and gases Model thermometer Thermostat, heat devices Heat and temperature Transfer - conduction, convection, radiation Applications Insulators	LIGHT (23 min.) Reflection Refraction Prisms, rainbows and the spectrum Lenses - concave and convex Pinhole camera Mirrors - concave and convex Other radiation Safety Speed of Light	SOUND (13 min.) Quality, harmonics Speed of sound Vibrations and frequency Sound devices Miscellaneous ideas Safety	ELECTRICITY/MAGNETISM (33 min.) Static electricity Current electricity Batteries and bulbs Series and parallel circuits Switches Resistance Electromagnetic fields Generating electricity Magnetic strength Writing a lab report

K-3 EARTH SCIENCE, (1 hr. 23 min.)**ASTRONOMY (26 min.)**

The earth's rotation
Time and time zones
Moon - characteristics and motion
Stars and constellations
Galaxies

GEOLOGY (16 min.)

Properties of rocks and soils
Sink/float - density of liquids
Earth's surface features
Soils - water holding capacity

OCEANOGRAPHY (6 min.)

Sand
Saltwater
Growing/observing salt crystals
Topography of the ocean floor
Miscellaneous topics

METEOROLOGY (34 min.)

Air - what it is, characteristics and properties
Density - gases vs. liquids
Density vs. altitude
Heat and air
Introduction to expansion of solids, liquids and gases
Wind - what it is, causes, measuring
Pressure
Water - solid, liquid, gas
Collecting water from the air
Clouds
Weather charts
Working with air - experiment using scientific methods

4-6 EARTH SCIENCE (1 hr. 52 min.)**ASTRONOMY (34 min.)**

Motion of moon, phases
Moon facts
Eclipses
Planets
Comets, Halley's Comet
Time - earth's revolution
Seasons
Stars, constellations
Measuring degrees

GEOLOGY (33 min.)

Chemistry of rocks, minerals
Growing crystals
Cooling rates vs. crystal size
Identifying minerals - physical properties
Rock types
Weathering of rocks
Earthquakes, faults

OCEANOGRAPHY (12 min.)

Ocean floor, features
Sonar
Plate tectonics
Salt in seawater

METEOROLOGY (29 min.)

Heating of earth and water
Cause of winds - earth's features
Temperature/pressure relationship
Water cycle
Hot air balloon
Air pressure - effects
Temperature/humidity
Relative humidity
Weather charts

K-3 LIFE SCIENCE (2 hrs. 8 min.)**CELLS/GENETICS (24 min.)**

The microprojector and its operation
Plant and animal cells
Cell model/cell division/observing an egg
Living vs. non-living
Classifying plants and animals

MICRO LIFE/FOSSILS (13 min.)

Microscopic life/preparing slides
Characteristics of protists
Microscopic animals (multicellular)
Fossils, model of a fossil

PLANTS (37 min.)

Useful and harmful plants
Observations and activities with seeds
Investigating plant growth
The parts of a plant and their functions
Simple plants: ferns and mosses

ANIMALS (17 min.)

Characteristics of vertebrates
Classifying animals
Investigating the earthworm
Mealworms, snails, sow bugs and crickets
Experimenting with brine shrimp
Classroom pets

HUMANS (19 min.)

Health and safety
Fingerprints
The skin, pores and glands
Reaction timer
Lung capacity
Muscles and joints
Adaptations

ECOSYSTEMS (8 min.)

Needs of living things
Resources in our community
Animal communities
Food chains
Miscellaneous activities

4-6 LIFE SCIENCE, Part 1 (1 hr. 40 min.)**CELLS/GENETICS (42 min.)**

Parts of a cell
Plant and animal cells
Characteristics of microorganisms
How cells reproduce
Life in a drop of water
Making permanent slides
Osmosis
Tissues, organs and organ systems
Characteristics of living things
Asexual and sexual reproduction
Chromosomes
Genetics
Variations among plants and animals

PLANTS - Section 1 (35 min.)

Flowers - monocots and dicots
Parts of a flower
Germination
Importance of cotyledons
Starch and sugar in cotyledons
Photosynthesis
Observing plant cells
Osmosis
Light and photosynthesis
Carbon dioxide, water and leaves

PLANTS - Section 2 (20 min.)

Stems
Woody vs. vascular stems
Auxins and plant growth
Function and parts of the stem
Tree rings
Roots
Vegetative reproduction
Plant adaptations
Tropisms
Importance of soil, value of agriculture
Homemade terrarium

4-6 LIFE SCIENCE, Part 2 (1 hr. 45 min.)**CLASSIFICATION/PROTISTS (24 min.)**

The classification scheme
Classification activities
Protists - fungi, molds, mildew and yeast

ANIMALS (43 min.)

Classroom pets
Adaptations - natural selection
Live frog lab
Goldfish observations
Fish scales
Earthworm experiments
Reproduction
Life cycles - metamorphosis
Mealworms, daphnia
Food chain
Brine shrimp experiments
Animal footprints

HUMANS (23 min.)

Classifying - characteristics
Using a torso - investigating body systems
The digestive system
Reproduction
Reaction timer
The eye
Squeeze power
Pulse detector
Teeth and bones
Investigating carbon dioxide production
Nutrition - measuring vitamin C

ECOSYSTEMS (13 min.)

Animal communities
Producers, consumers and decomposers
Food chains and food webs
Thickness of an egg shell
Investigating owl pellets