

School District of La Crosse

# **Fifth Grade Science Curriculum**

Developed for Implementation in 2003-2004

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# **Guiding Principles for Curriculum Development**

## **School District of LaCrosse**

### **Board of Education's ENDS Policies Adopted 2001**

#### **E-1 District Mission**

Students will discover their talents and abilities and will be prepared to pursue their dreams and aspirations while contributing effectively to their diverse communities.

#### **E-2 Academic Achievement Goals**

Students will demonstrate continuous improvement toward a high level of individual success in all required and elective academic/curricular areas using multiple measures of performance.

#### **E-3 Involved Citizenship**

Students will strive for mutual understanding as contributing citizens in a diverse world.

#### **E-4 Responsible Life Choices**

Students will acquire the knowledge and skills necessary to make effective and responsible life choices.

### **Wisconsin Academic Model Standards**

All district curricula will be aligned to the Wisconsin Model Academic Standards available on the web at <http://www.dpi.state.wi.us/dpi/standards/sciintro.html>

### **District Non-Discrimination Policy**

It is the policy of the School District of La Crosse that no person may be denied admission to any public school in this district or be denied participation in, be denied the benefits of, or be discriminated against in any curricular, extracurricular, pupil service, recreation, or other program or activity because of the person's sex, race, religion, national origin, ancestry, creed, pregnancy, marital or parental status, sexual orientation, or physical, mental, emotional, or learning disability or handicap as required by s. 118.13 Wis. Stats., and/or section 504 of the Rehabilitation Act of 1973.

**School District of La Crosse  
Elementary Science Curriculum 2003-2004**

<b>Kindergarten</b>	<b>1<sup>st</sup> Grade</b>	<b>2<sup>nd</sup> Grade</b>	<b>3<sup>rd</sup> Grade</b>	<b>4<sup>th</sup> Grade</b>	<b>5<sup>th</sup> Grade</b>
Animals (L)	Organisms Plants & Animals (L) (New STC '96-'97)	Balancing & Weighing (P) (New STC '95-'96)	Rocks & Minerals (E) (New STC '97-'98)	Plant Growth & Development (L) (New STC '97-'98)	Ecosystems (E) (New STC '95-'96)
Plants (L)	Comparing & Measuring (P) (Pilot STC '98-'99)	Changes (P) (Pilot STC '98-'99)	Sound (P) (New STC '95-'96)	Motion & Design (P) (New STC '98-'99)	Color & Light
Weather & Clothing (E) Fabric (Optional) (Foss '98-'99)	Solids & Liquids (P) (New STC '98-'99)	Life Cycle of a Butterfly (L) (New STC '96-'97)	Animals, Habitats & Plants (L) (Delta '99-'00)	Astronomy (E) (Harcourt/Brace '99- '00)	Floating & Sinking (P) (New STC '96-'97)
Paper (P) (Foss '98-'99)	Weather & Me (E) (New STC '95-'96)	Soils (E) (New STC '97-'98)	Chemical Tests (P) (New STC '96-'97)	Electric Circuits (P) (New STC '95-'96)	Microworlds (L) (New STC '97-'98)

All STC Units emphasize scientific reasoning skills/process skills  
 Observing Grades 1-5  
 Measuring Grades 1-5

Identifying Properties 1-5  
 Seeking Evidence 1-5

Recognizing Patterns & Cycles 2-5  
 Identifying Cause and Effect 4-5

Extending the Senses 4-5

# Science: Fifth Grade

**Unit:** Life and Environmental Science: Microworlds

**Time Line:** 16 Lessons

## Unit Sub-Topics:

- Lenses and Magnification
- Cells: Structure, function, and behavior
- Diversity of adaptations of organisms

## Wisconsin State Standards:

A.8.1, A.8.4, A.8.6, A.8.7, B.8.1, B.8.2, B.8.3, B.8.5, C.8.1, C.8.2, C.8.3, C.8.4, C.8.6, C.8.7, C.8.8, C.8.9, C.8.10, C.8.11, F.8.1, F.8.2, F.8.3, F.8.6, F.8.7

## Learner Outcomes:

Students will learn

- to use a microscope to gather, analyze, and interpret data. Standard C.
- to predict, observe, and describe scientific investigations of organisms. Standards A and B.
- that scientists designed and use microscopes to extend observational ability to investigate their ideas. Standard B.
- that all living organisms are made up of at least one cell. Standard F.

## Instructional Strategies:

- KWL – Chart – What do you know? What do you want to know? What have you learned?
- Inquiry Based Learning (hands on/minds on)
- Concept Webs
- Venn Diagrams
- T-charts

## Integration:

## Suggested Activities/Resources:

- STC Science Kit and T.E.
- Software
- Trade Books: Bibliography in T.E. Manual
- Field Trips

## Suggested Assessments:

- Examples of classroom assessments: Drawings, journals, embedded products and activities, anecdotal notes and paper and pencil responses, identification, presentations

# Science: Fifth Grade

**Unit:** Earth Science: Ecosystems

**Time Line:** Minimum of 16 Lessons

## Unit Sub-Topics:

- Structure of Earth systems
- Structure and function of living systems
- Interconnectiveness of the system
- Changes in the balance of the systems

## Wisconsin State Standards:

A.8.1, A.8.2, A.8.6, A.8.7, A.8.8, B.8.3, B.8.4, B.8.5, B.8.6, C.8.1, C.8.2, C.8.3, C.8.4, C.8.5, C.8.6, C.8.9, F.8.2, F.8.7, F.8.8, F.8.9, F.8.10, G.8.3, H.8.3

## Learner Outcomes:

Students will learn:

- to use appropriate tools and techniques to gather, analyze and interpret data. Standards A, B, and C.
- that an Earth system consists of soil, water, air, light, and living organisms. Standard F.
- that organisms can be categorized as producers, consumers, or decomposers. Standard F.
- that an ecosystem is a community of organisms and its interaction with its environment (can be illustrated by food webs). Standards F and G.
- that natural and human-made events can “disturb” an ecosystem. Standard H.

## Instructional Strategies:

- KWL – Chart – What do you know? What do you want to know? What have you learned?
- Inquiry Based Learning (hands on/minds on)
- Concept Webs
- Venn Diagrams
- Investigations using the scientific method
- T-Charts

## Integration:

## Suggested Activities/Resources:

- STC Science Kit and T.E. – Ecosystems
- Trade Books: Bibliography in T.E. Manual

## Suggested Assessments:

- Examples of classroom assessments: Drawings, journals, embedded products and activities, anecdotal notes and paper and pencil responses, building models, design and experiment and implement it.

# Science: Fifth Grade

**Unit:** Color & Light

**Time Line:** 9 Weeks – 13 Activities

## Unit Sub-Topics:

- The Spectrum of Visible Light
- Mixing Pigments
- Separating Pigments
- Color Filters and Light
- Mixing Light Beams
- Primary Colors
- Colored Lighting
- Color Images
- Shades of Color
- Seeing in 3-D
- Sight and Afterimages
- Color Wheels

## Wisconsin State Standards:

A.8.1, A.8.3, B.8.3, C.8.1, C.8.2, C.8.3, C.8.4, C.8.5, C.8.6, C.8.7, C.8.8, C.8.9, C.8.10, D.8.1, D.8.4, D.8.8

## Learner Outcomes:

Students will:

- Observe what happens when sunlight passes through a prism.
- Discover the colors of the visible light spectrum.
- Make a color wheel to see how various colors are related.
- Predict and then observe the results of mixing different colors of pigment
- Discover how and why certain colors, when mixed together, form certain other colors.
- Learn the significance of the primary color pigments.
- Use paper chromatography to separate a mixture of pigments.
- Apply what they know about color mixing to explain how the process works.
- Shine white light through color filters and observe how the color of the light changes.
- Predict and then observe the effect of passing white light through different combinations of color filters.
- Compare this process with the process of mixing pigments.
- Use color filters and flashlights to create colored beams of light.
- Combine different-colored beams of light on a white screen and record the results.
- Compare additive color mixing with subtractive color mixing.
- Create colored light by passing it through color filters.
- Separate colored light by directing it through a prism.
- Discover a new set of primary colors: cyan, magenta, and yellow.
- Use filters and a flashlight to make colored light.
- Shine colored light on different-colored squares of paper.
- Compare the results with those obtained using other methods of mixing colors.
- Discover that a pattern of small dots, when viewed from a distance, can form an image.
- Compare color photographs with color and black-and-white printed pictures.

- Predict and observe the results of mixing unequal amounts of pigments.
- Discover how diluting a mixture with water affects the shade of the mixture.
- Attempt to explain what they observe in terms of the color-mixing processes they have already seen.
- Record what happens when color drawings are viewed through color filters.
- Use what they know about color and filters to explain what they observe.
- Create drawings that change when viewed through color filters.
- Use color filters to make a set of glasses that can be used to view three-dimensional images.
- Draw a picture that will appear three-dimensional when viewed through the glasses.
- Learn how people see things in three dimensions.
- Discover what causes an afterimage to form.
- Learn how an object's color and the color of its afterimage are related.
- Use this information to create an oddly colored picture that looks normal as an afterimage.
- Gain insight into how our eyes perceive color.
- Observe the effect of spinning a wheel with different-colored halves.
- Predict what will happen when other color wheels are spun.
- Compare this process to other color-mixing processes.

#### **Instructional Strategies:**

- KWL
- Demonstrations
- Labs – Hands On/Minds On
- Learning Cycle
- Mapping
- Designing Models

#### **Integration:**

- Art
- Writing
- Social Studies
- Photography – TV – pixels
- Computer Links (SciLinks)

#### **Suggested Activities/Resources:**

- Delta Kit – Color & Light
- Art Teacher
- Trade Books

#### **Suggested Assessments:**

- Models
- Completed Labs
- Cooperative Groups
- Observations
- Written Quizzes and/or Tests

# Science: Fifth Grade

**Unit:** Physical Science: Floating & Sinking Time

**Time Line:** Minimum of 16 Lessons

## Unit Sub-Topics:

- Properties and the change of properties in matter
- Forces involved in floating and sinking
- Scientific inquiry
- Characteristics of buoyancy

## Wisconsin State Standards:

A.8.1, A.8.3, A.8.6, B.8.2, B.8.3, B.8.5, C.8.1, C.8.2, C.8.3, C.8.4, C.8.5, C.8.6, C.8.7, C.8.9, D.8.1, D.8.5, D.8.8, G.8.3, G.8.7

## Learner Outcomes:

Students will learn:

- to use appropriate tools and techniques to gather, analyze, and interpret data. Standard A, B, and C.
- that several variables affect the buoyancy of an object. Standard D.
- that gravity and buoyancy are opposing forces. Standard D.
- to apply previously learned skills to solve problems. Standard G.
- that buoyancy of objects vary based on its shape, size and density, and the density of the liquid. Standard D.

## Instructional Strategies:

- KWL – Chart – What do you know? What do you want to know? What have you learned?
- Inquiry Based Learning (hands on/minds on)
- Concept Web
- Venn Diagrams
- Building Models
- T – Charts

## Integration:

## Suggested Activities/Resources:

- STC Science Kit and T.E.
- Video – Dr. Dad's
- Trade Books: Bibliography in T.E. Manual

## Suggested Assessments:

- Examples of classroom assessments: Drawings, journals, embedded products and activities, anecdotal notes, and paper and pencil responses.

Wisconsin Model Academic Standards		E	CL	FS	M
<b>5<sup>th</sup> Grade Science Alignment</b>					
<b>A. Science Connections</b>					
A.8.1	Develop their understanding of the science themes by using the themes to frame questions about science-related issues and problems.	✓	✓	✓	✓
A.8.2	Describe limitations of science systems and give reasons why specific science themes are included in or excluded from those systems.	✓			
A.8.3	Defend explanations and models by collecting and organizing evidence that supports them and critique explanations and models by collecting and organizing evidence that conflicts with them.		✓	✓	
A.8.4	Collect evidence to show that models developed as explanations for events were (and are) based on the evidence available to scientists at the time.				✓
A.8.5	Show how models and explanations, based on systems, were changed as new evidence accumulated (the effects of constancy, evolution, change, and measurement should all be part of these explanations.)				
A.8.6	Use models and explanations to predict actions and events in the natural world.	✓		✓	✓
A.8.7	Design real or thought investigations to test the usefulness and limitations of a model.	✓			✓
A.8.8	Use the themes of evolution, equilibrium, and energy to predict future events or changes in the natural world.	✓			
<b>B. Nature of Science</b>					
B.8.1	Describe how scientific knowledge and concepts have changed over time in the earth and space, life and environmental, and physical sciences.				✓
B.8.2	Identify and describe major changes that have occurred over in conceptual models and explanations in the earth and space, life and environmental, and physical sciences and identify the people, cultures, and conditions that led to these developments.			✓	✓
B.8.3	Explain how the general rules of science apply to the development and use of evidence in science investigations, model making, and applications.	✓	✓	✓	✓
B.8.4	Describe types of reasoning and evidence used outside of science to draw conclusions about the natural world.	✓			
B.8.5	Explain ways in which science knowledge is shared, checked, and extended, and show how these processes change over time.	✓		✓	✓
B.8.6	Explain the ways in which scientific knowledge is useful and also limited when applied to social issues.	✓			
<b>C. Science Inquiry</b>					
C.8.1	Identify questions they can investigate using resources and equipment they have available.	✓	✓	✓	✓
C.8.2	Identify data and locate sources of information including their own records to answer the questions being investigated.	✓	✓	✓	✓
C.8.3	Design and safely conduct investigations that provide reliable quantitative or qualitative data, as appropriate, to answer their questions.	✓	✓	✓	✓

Wisconsin Model Academic Standards		E	CL	FS	M
<b>5<sup>th</sup> Grade Science Alignment</b>					
C.8.4	Use inferences to help decide possible results of their investigations, use observations to check their inferences.	✓	✓	✓	✓
C.8.5	Use accepted scientific knowledge, models, and theories to explain their results and to raise further questions about their investigations.	✓	✓	✓	
C.8.6	State what they have learned from investigations, relating their inferences to scientific knowledge and to data they have collected.	✓	✓	✓	✓
C.8.7	Explain their data and conclusions in ways that allow an audience to understand the questions they selected for investigations and the answers they have developed.		✓	✓	✓
C.8.8	Use computer software and other technologies to organize, process, and present their data.		✓		✓
C.8.9	Evaluate, explain, and defend the validity of questions, hypotheses, and conclusions to their investigations.	✓	✓	✓	✓
C.8.10	Discuss the importance of their results and implications of their work with peers, teachers, and other adults.		✓		✓
C.8.11	Raise further questions which still need to be answered.				✓
<b>D. Physical Science</b>					
PROPERTIES AND CHANGES OF PROPERTIES IN MATTER					
D.8.1	Observe, describe, and measure physical and chemical properties of elements and other substances to identify and group them according to properties such as density, melting points, boiling points, conductivity, magnetic attraction, solubility, and reactions to common physical and chemical tests.		✓	✓	
D.8.2	Use the major ideas of atomic theory and molecular theory to describe physical and chemical interactions among substances, including solids, liquids, and gases.				
D.8.3	Understand how chemical interactions and behaviors lead to new substances with different properties.				
D.8.4	While conducting investigations, use the science themes to develop explanations of physical and chemical interactions and energy exchanges.		✓		
MOTIONS AND FORCES					
D.8.5	While conducting investigations, explain the motion of objects by describing the forces acting on them.			✓	
D.8.6	While conducting investigations, explain the motion of objects using concepts of speed, velocity, acceleration, friction, momentum, and changes over time, among others, and apply these concepts and explanations to real-life situations outside the classroom.				
D.8.7	While conducting investigations of common physical and chemical interactions occurring in the laboratory and the outside world, use commonly accepted definitions of energy and the idea of energy conservation.				
D.8.8	Describe and investigate the properties of light, heat, gravity, radio waves, magnetic fields, electrical fields, and sound waves as they interact with		✓	✓	

Wisconsin Model Academic Standards		E	CL	FS	M
<b>5<sup>th</sup> Grade Science Alignment</b>					
	material objects in common situations.				
D.8.9	Explain the behaviors of various forms of energy by using the models of energy transmission, both in the laboratory and in real-life situations in the outside world.				
D.8.10	Explain how models of the atomic structure of matter have changed over time, including historical models and modern atomic theory.				
<b>E. Earth and Space Science</b>					
PROPERTIES OF EARTH MATERIALS					
E.8.1	Using the science themes, explain and predict changes in major features of land, water and atmospheric systems.				
E.8.2	Describe underlying structures of the earth that cause changes in the earth's surface.				
E.8.3	Using the science themes during the process of investigation, describe climate, weather, ocean currents, soil movements and changes in the forces acting on the earth.				
E.8.4	Using the science themes, analyze the influence living organisms have had on the earth's systems, including their impact on the composition of the atmosphere and the weathering of rocks.				
EARTH'S HISTORY					
E.8.5	Analyze the geologic and life history of the earth, including change over time, using various forms of scientific evidence.				
E.8.6	Describe through investigations the use of the earth's resources by humans in both past and current cultures, particularly how changes in the resources used for the past 100 years are the basis for efforts to conserve and recycle renewable and non-renewable resources.				
EARTH IN THE SOLAR SYSTEM					
E.8.7	Describe the general structure of the solar system, galaxies, and the universe, explaining the nature of the evidence used to develop current models of the universe.				
E.8.8	Using past and current models of the structure of the solar system, explain the daily, monthly, yearly, and long-term cycles of the earth, citing evidence gained from personal observation as well as evidence used by scientists				
<b>F. Life and Environmental Science</b>					
STRUCTURE AND FUNCTION IN LIVING THINGS					
F.8.1	Understand the structure and function of cells, organs, tissues, organ systems, and whole organisms.				✓
F.8.2	Show how organisms have adapted structures to match their functions, providing means of encouraging individual and group survival within specific environments.	✓			✓
F.8.3	Differentiate between single-celled and multiple-celled organisms (humans) through investigation, comparing the cell functions of specialized cells for				✓

Wisconsin Model Academic Standards		E	CL	FS	M
<b>5<sup>th</sup> Grade Science Alignment</b>					
	each type of organism.				
<b>REPRODUCTION AND HEREDITY</b>					
F.8.4	Investigate and explain that heredity is comprised of the characteristic traits found in genes within the cell of an organism.				
F.8.5	Show how different structures both reproduce and pass on characteristics of their group.				
<b>REGULATION AND BEHAVIOR</b>					
F.8.6	Understand that an organism is regulated both internally and externally.				✓
F.8.7	Understand that an organism's behavior evolves through adaptation to its environment.	✓			✓
<b>POPULATIONS AND ECOSYSTEMS</b>					
F.8.8	Show through investigations how organisms both depend on and contribute to the balance or imbalance of populations and/or ecosystems, which in turn contribute to the total system of life on the planet.	✓			
<b>DIVERSITY AND ADAPTATIONS OF ORGANISMS</b>					
F.8.9	Explain how some of the changes on the earth are contributing to changes in the balance of life and affecting the survival or population growth of certain species.	✓			
F.8.10	Project how current trends in human resource use and population growth will influence the natural environment, and show how current policies affect those trends.	✓			
<b>G. Science Applications</b>					
G.8.1	Identify and investigate the skills people need for a career in science or technology and identify the academic courses that a person pursuing such a career would need.				
G.8.2	Explain how current scientific and technological discoveries have an influence on the work people do and how some of these discoveries also lead to new careers.				
G.8.3	Illustrate the impact that science and technology have had, both good and bad, on careers, systems, society, environment, and quality of life.	✓	✓	✓	
G.8.4	Propose a design (or re-design) of an applied science model or a machine that will have an impact in the community or elsewhere in the world and show how the design (or re-design) might work, including potential side-effects.				
G.8.5	Investigate a specific local problem to which there has been a scientific or technological solution, including proposals for alternative courses of action, the choices that were made, reasons for the choices, any new problems created, and subsequent community satisfaction.				
G.8.6	Use current texts, encyclopedias, source books, computers, experts, the popular press, or other relevant sources to identify examples of how				

Wisconsin Model Academic Standards		E	CL	FS	M
<b>5<sup>th</sup> Grade Science Alignment</b>					
	scientific discoveries have resulted in new technology.				
G.8.7	Show evidence of how science and technology are interdependent, using some examples drawn from personally conducted investigations.			✓	
<b>H. Science in Social and Personal Perspectives</b>					
H.8.1	Evaluate the scientific evidence used in various media (for example, television, radio, Internet, popular press, and scientific journals) to address a social issue, using criteria of accuracy, logic, bias, relevance of data, and credibility of sources.				
H.8.2	Present a scientific solution to a problem involving the earth and space, life and environmental, or physical sciences and participate in a consensus-building discussion to arrive at a group decision.				
H.8.3	Understand the consequences of decisions affecting personal health and safety.	✓	✓		

## GLOSSARY OF TERMS

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### SCIENCE THEMES

Each of the following terms refers to a theme that connects and unifies the many disciplines of science. The themes are found particularly in Standard A and are mentioned consistently throughout the science standards. They are identified with an asterisk (\*) each time they appear.

**Change.** A variance in the rate, scale, and pattern, including trends and cycles.

**Constancy.** The stability of a property, such as the speed of light.

**Equilibrium.** The physical state in which forces and changes occur in opposite and offsetting directions.

**Evidence.** Data and documentation that support inferences or conclusions.

**Evolution.** A series of changes, some gradual and some sporadic, that accounts for the present form and function\* of objects.

**Explanation.** The skill of communication in which an interpretation of information is given and stated to others.

**Form and Function.** Complimentary aspects of objects, organisms, and systems in the natural world.

**Measurement.** The quantification of changes in systems, including mathematics.

**Models.** Tentative schemes or structures that correspond to real objects, events, or classes of events, and that have explanatory power.

**Order.** The behavior of units of matter, objects, organisms, or events in the universe.

**Organization.** Descriptions of systems based on complexity and/or order.

**Systems.** An organized group of related objects or components that form a whole.

## TERMS UNIQUE TO SCIENCE

The following terms are used uniquely in science. They are used consistently throughout the standards and are identified by an asterisk (\*) each time they appear. They represent the range of rigorous science skills and knowledge found in the standards.

**Analyze.** The skill of recognizing the underlying details of important facts or patterns that are not always readily visible.

**Apply.** The skill of selecting and using information in other situations or problems.

**Construct.** The skill of developing or creating.

**Describe.** The skill of developing a detailed picture or image.

**Discover.** The skill of learning through study or investigation.

**Energy.** The work that a physical system is capable of completing or doing.

**Evaluate.** The skill of collecting and examining data to make judgments and appraisals.

**Group.** The skill of identifying objects according to characteristics.

**Identify.** The skill of recognizing patterns, facts, or details.

**Inference.** The skill of using the results of an investigation based on a premise.

**Illustrate.** The skill of giving examples to describe something.

**Interaction.** The influence of objects, materials, or events on one another.

**Investigate.** Scientific methodology that systematically employs many inquiry skills.

**Observation.** The skill of describing scientific events.

**Predict.** The skill of explaining new events based on observations or information.

**Relate.** The skill of association.

**Show.** The skill of illustration.

**Understand.** The skill of having and applying well-organized bodies of knowledge.

**5<sup>th</sup> Grade Explanatory Notes on  
WI State Science Standards in Relation to School Curriculum  
2003-2004**

**Microworlds**

**A. Science Connections**

Students in Wisconsin will understand that there are unifying themes: (systems, order, organization, and interaction); (evidence, models, and explanations); (constancy, change, and measurement); (evolutions, equilibrium, and energy); (form and function) among the scientific disciplines.

A.8.1 Students should understand the themes of systems, order, organization, and interactions in this unit, i.e. cells and cell structure, pond water – interactions, form and function i.e. magnification with different shapes, how the microscope works.

A.8.4 Microscopes have aided our understanding and knowledge of the cell and cell structure.

A.8.6 Students will learn from the pond water investigations and make predictions. Students will investigate the cells in an onion and make connections between cells in living organisms.

A.8.7 Students will gain an understanding of what magnifies and what doesn't.

**B. Nature of Science**

Students in Wisconsin will understand that science is ongoing and inventive, and that scientific understandings have changed over time as new evidence is found.

B.8.1 We have a better understanding of the cells.

B.8.2 Microscopes have evolved tremendously. The inventor of the microscope was Leeuwenhoek.

B.8.3 The knowledge of lenses and our knowledge of magnification principles of physics.

B.8.5 The improvements of microscopes and consequently the explanation of single- and multiple-celled organisms.

B.8.6 Forms of pointillism – newspaper print.

**C. Science Inquiry**

Students in Wisconsin will investigate questions using scientific methods and tools, revise their personal understanding to accommodate knowledge, and communicate these understandings to others.

C.8.1 The students investigate different organisms in the pond water model. Students also learn the properties of different lenses.

C.8.2 through C.8.11  
Students have different opportunities to do science investigations (scientific method, observing, planning, recording, and explaining results).

**D. Physical Science**

Students in Wisconsin will demonstrate an understanding of the physical and chemical properties of matter, the forms and properties of energy, and the ways in which matter and energy interact.

Not covered in this unit.

**E. Earth and Space Science**

Students in Wisconsin will demonstrate an understanding of the structure and systems of the earth and other bodies in the universe and their interactions.

Not covered in this unit.

**F. Life and Environmental Science**

Students in Wisconsin will demonstrate an understanding of the characteristics and structures of living things, the processes of life, and how living things interact with one another and their environment.

F.8.1 through F.8.3 – Self-explanatory

F.8.6, F.8.7 – Self-explanatory

**G. Science Applications**

Students in Wisconsin will demonstrate an understanding of the relationship between science and technology and the ways in which that relationship influences human activities.

Not covered in this unit.

**H. Science in Social and Personal Perspectives**

Students in Wisconsin will use scientific information and skills to make decisions about themselves, Wisconsin, and the world in which they live.

Not covered in this unit.

## **Floating and Sinking**

### **A. Science Connections**

Students in Wisconsin will understand that there are unifying themes: (systems, order, organization, and interactions); (evidence, models, and explanations); (constancy, change, and measurement); (evolution, equilibrium, and energy); (form and function) among the scientific disciplines.

A.8.1 Students understand the theme of interactions; (solids and liquids), the themes of constancy, change and measurement; (forces involved in floating and sinking); and form and function – the shape of a figure and its ability to float.

A.8.3 The properties/characteristics of a material to float or sink. The same material will sink in one form and float in another.

A.8.6 Salt water versus fresh water and floating and sinking.

### **B. Nature of Science**

Students in Wisconsin will understand that science is ongoing and inventive, and that scientific understandings have changed over time as new evidence is found.

B.8.2 The history of ship building throughout civilization and our understanding of floating and sinking.

B.8.3 The relationship of floating and sinking with the concept of density.

B.8.5 Throughout history the different ship building models have been shared.

### **C. Science Inquiry**

Students in Wisconsin will investigate questions using scientific methods and tools, revise their personal understanding to accommodate knowledge, and communicate these understandings to others.

C.8.1 through C.8.9 – Students should understand the steps involved in a science investigation (scientific method, observing, predicting, planning, recording and explaining the results of their investigations).

**D. Physical Science**

Students in Wisconsin will demonstrate an understanding of the physical and chemical properties of matter, the forms and properties of energy, and the ways in which matter and energy interact.

D.8.1, D.8.5, D.8.8 – Self-explanatory

**E. Earth and Space Science**

Students in Wisconsin will demonstrate an understanding of the structure and systems of the earth and other bodies in the universe and their interactions.

Not covered in this unit.

**F. Life and Environmental Science**

Students in Wisconsin will demonstrate an understanding of the characteristics and structures of living things, the processes of life, and how living things interact with one another and their environment.

Not covered in this unit.

**G. Science Applications**

Students in Wisconsin will demonstrate an understanding of the relationship between science and technology and the ways in which that relationship influences human activities.

G.8.3 Ship Building.

G.8.7 Students use tinfoil to construct their own designs for floating devices.

**H. Science in Social and Personal Perspectives**

Students in Wisconsin will use scientific information and skills to make decisions about themselves, Wisconsin, and the world in which they live.

Not covered in this unit.

## **Ecosystems**

### **A. Science Connections**

Students in Wisconsin will understand that there are unifying themes: (systems, order, organization, and interactions); (evidence, models, and explanations); (constancy, change, and measurement); (evolution, equilibrium, and energy); (form and function) among the scientific disciplines.

A.8.1 The themes of interactions, equilibrium and constancy, change and measurement are involved in this unit. The interactions of the plants and animals in the ecosystems model. The changes and the possible equilibrium that should exist in the system.

A.8.2 In an ecosystem, parts of the system can dominate other parts demonstrating a lack of balance.

A.8.6 The ecosystems model and the affects of salt on the system demonstrates pollution in the natural world.

A.8.7 The salt investigation in the system demonstrates this.

A.8.8 Students can take the things they have learned about the ecosystem model to make predictions.

### **B. Nature of Science**

Students in Wisconsin will understand that science is ongoing and inventive, and that scientific understandings have changed over time as new evidence is found.

B.8.3 The model system with the salt added in comparison to the control system, i.e. only one thing is changed.

B.8.4 Ethical issues about control of our ecosystem – stewardship.

B.8.5 The balance of our ecosystem has changed over time and scientists are sharing their expertise and solutions.

B.8.6 The use of herbicides and pesticides, the pros and cons.

### **C. Science Inquiry**

Students in Wisconsin will investigate questions using scientific methods and tools, revise their personal understanding to accommodate knowledge, and communicate these understandings to others.

C.8.1 through C.8.9 Students should understand the steps involved in a science investigation (scientific method, observing, predicting, planning, recording and explaining the results of their investigations).

**D. Physical Science**

Students in Wisconsin will demonstrate an understanding of the physical and chemical properties of matter, the forms and properties of energy, and the ways in which matter and energy interact.

Not covered in this unit.

**E. Earth and Space Science**

Students in Wisconsin will demonstrate an understanding of the structure and systems of the earth and other bodies in the universe and their interactions.

Not covered in this unit.

**F. Life and Environmental Science**

Students in Wisconsin will demonstrate an understanding of the characteristics and structures of living things, the process of life, and how living things interact with one another and their environment.

F.8.2, F.8.7, F.8.8, F.8.9 and F.8.10 – Self-explanatory

**G. Science Applications**

Students in Wisconsin will demonstrate an understanding of the relationship between science and technology and the ways in which that relationship influences human activities.

G.8.3 Pollution and food production techniques

**H. Science in Social and Personal Perspectives**

Students in Wisconsin will use scientific information and skills to make decisions about themselves, Wisconsin, and the world in which they live.

H.8.3 Self-explanatory

## 5<sup>th</sup> Grade Ecosystems Materials

When ordering this kit, please indicate the number of 2-liter bottles you will need. This unit requires a number of live shipments. This is the procedures to be used in ordering these items.

Call Marineland for the following items.

Phone number – 783-3186

Please give them 5 working days notice. Once they get the order together, they will call Carol Guanella, and she will deliver them to your school. Give Marineland your name, school, and the date you would like the shipment delivered.

How to obtain the needed critters – (it is best not to get the crickets and pillbugs before the seedlings are growing.)

### ***Ecosystems – Aquatic Organisms***

- 150-255 Duckweek Plants
  - 30 Sprigs of Elodea
  - 3 Jars of Algae
  - 30 Pond Snails (Ramshorn)
  - 30 Guppies – Hardier Ones
- } Call Marineland for all of these  
783-3186

### ***Ecosystems – Terrestrial Organisms***

- 30 Crickets – Call Marineland for these
- 30 Pillbugs – Call Carol Guanella, 789-7677

Carol will send the order to Carolina Biological. Give Carol your name, school, and the date you would like the delivery. Please allow at least 10 days for delivery.

## **Microworld Materials**

Please call Carol when you would like the live shipments of Blepharism, Vinegar and Volvox. She will make your order to Carolina Biological. Please allow 10 days delivery. When you call you will need to give Carol your name, school, and the date you would like the items delivered.

***Pond Water*** – Collect before it freezes.

***Live Shipments of Blepharism, Vinegar, & Volvox*** – Call Carol Guanella, 789-7677

FYI –

Two large classroom microscopes are available in your school's LMC for your use with this unit.

Reminder – The Videoflex camera can be used to assist in teaching this unit. The Videoflex is an excellent teaching device and is relatively easy to use. Talk to your school's LMC director for additional information about this device.

## Science Education WEB Sites

Science Education (Index heading from Todd Wehr Memorial Library, Viterbo College  
<http://www.viterbo.edu/academic/as/library/mainpag.htm>)

### Science Education Standards and References (Sub Heading 1)

National Science Standards <http://www.nap.edu/readingroom/books/nses>

National Academy Press <http://www.nap.edu>

Project-Based Science (PBS) <http://www.umich.edu/~pbsgroup/index.html>

### NSTA Pathways Reference Sites

Science as Inquiry <http://www.omsi.edu/sln/www/background/inquiry>

<http://webfoot2.omsi.edu>

Physical Science [http://www.gene.com/ae/AE/AEC/AEF/1996/thompson\\_jell-0.html](http://www.gene.com/ae/AE/AEC/AEF/1996/thompson_jell-0.html)

[http://www.etc.bc.ca/apase/scitech/p\\_sci.html](http://www.etc.bc.ca/apase/scitech/p_sci.html)

Life Science <http://www.gene.com/ae/AE>

<http://www.gene.com/atg-bin/pphtml/ae/atg/index.pphtml>

Earth and Space Science <http://athena.wednet.edu/curric/space/index.html>

<http://vulcan.wr.usgs.gov/Photo/framework.html>

The Learning WEB <http://www.usgs.gov/education>

Science and Technology <http://sln.fi.edu/tfi/activity/act-summ.html>

<http://ofcn.org/cyber.serv/academy/ace/sci/cecsci/cecsci017.html>

Mini Lessons <http://ofcn.org/cyber.serv/academy/ace/sci/elem.html>

Personal & Social Perspec. <http://www.gene.com/ae/AE/AEC/AEF/1996drake.html>

<http://www.zpg.org/zpg/popquiz.html>

History of Science            <http://weber.u.washington.edu/~mudrock/HISTORY/science.html>  
<http://www.minnetonka.k12.mn.us/support/science/good.html>

### Science Education Groups

NSTA            <http://www.nsta.org>  
NAS            <http://www.nas.edu>  
NSRC/STC    <http://www.si.edu/nsrc>  
TERC           <http://www.terc.edu>  
AIMS           <http://www.aimsedu.org>  
ACS            <http://www.acs.org>  
FOSS           <http://www.ebec.com/ebechp.htm>

### Children's Sites

KIDS WEB Digital Library            <http://www.npac.syr.edu/textbook/kidsweb>  
Project DRAGONFLY            <http://www.muohio.edu/Dragonfly>  
Cool Sites from NAP            <http://www.nap.edu/fresh/hot/links.html>  
Cool Sites for La Crosse Schools  
                                 <http://www.viterbo.edu/personalpages/faculty/Rruppel/emerson/emerson.html>  
Nine Planets Exploration Site            <http://seds.lpl.arizona.edu/nineplanets/nineplanets.html>  
The Thinking Fountain  
                                 <http://www.sci.mus.mn.us/sln/tf/nav/thinkingfountain.html>

### Teacher Enhancement Sites

NAS/NAE/NRC Publications            <http://www2.nas.edu/wwwcat/Education.html>  
NSTA Online Resources            <http://www.nsta.org/onlineresources>  
ACS Science Education            <http://www.acs.org/edugen2/education/aboutedu.htm>  
U. of Michigan Virtual Library            <http://ipl.sils.umich.edu>

U. of Michigan Digital Library	<a href="http://http2/sils.umich.edu/UMDL/HomePage.html">http://http2/sils.umich.edu/UMDL/HomePage.html</a>
Galaxy Professional Resource	<a href="http://www.einet.net/galaxy/Science.html">http://www.einet.net/galaxy/Science.html</a>
Penn State	<a href="http://jek113.rh.psu.edu">http://jek113.rh.psu.edu</a>

**School District of La Crosse  
Science Department  
Hands-On Science Kit Request Form**

Please fill out request form to order science kits. Return to Carol Guanella at Hogan. A copy will be sent back to you for confirmation.

School Name \_\_\_\_\_

Teacher Name(s) \_\_\_\_\_

Unit/Kit \_\_\_\_\_

Grade \_\_\_\_\_

Number of Kits \_\_\_\_\_

Desired Dates      1)      From: \_\_\_\_\_      To: \_\_\_\_\_

(3 CHOICES)      2)      From: \_\_\_\_\_      To: \_\_\_\_\_

                         3)      From: \_\_\_\_\_      To: \_\_\_\_\_

.....  
DATE REQUEST RECEIVED \_\_\_\_\_

CONFIRMED \_\_\_\_\_

KIT NUMBER(S) \_\_\_\_\_

APPROXIMATE DATE AVAILABLE \_\_\_\_\_

SUBMIT KIT REQUEST TO CAROL GUANELLA – HOGAN ADMIN. CENTER  
PHONE NUMBER – 789-7677

ALLOW AT LEAST ONE WEEK BEFORE REQUESTED DELIVERY DATE

RETURN KIT TO YOUR DESIGNATED AREA FOR PICK-UP WHEN COMPLETED

PLEASE INDICATE THE MATERIALS WHICH MUST BE REPLENISHED

THANKS FOR YOUR COOPERATION