

A Correlation of the Science and Technology for Children™ Curriculum to the Oak Park (Illinois) Learning Standards for Science

Prepared by Carolina Biological Supply Company

The following tables are provided to give a quick visual guide to the correlation of the Science and Technology for Children™ (STC™) units of study to the Oak Park (Illinois) Learning Standards for Science. Since there is some flexibility in grade-level placement with the STC units, we suggest that you give consideration to units recommended for the grade level above and the grade level below the grade being considered. For example, STC units from grades one, two, and three have been used in the grade two correlation. If a grade-level concept is met by an STC unit that falls outside the grade range, it is indicated by an asterisk (*). All fourth-grade through sixth-grade unit kits now include a Discovery Deck, a set of extensions for the unit. When the Discovery Deck meets or helps to meet a grade-level concept, the abbreviation DD will follow the unit abbreviation.

Key to STC™ Abbreviations

O Organisms	PGD Plant Growth and Development	Mw Microworlds
W Weather	RM Rocks and Minerals	E Ecosystems
SL Solids and Liquids	CT Chemical Tests	FC Food Chemistry
CM Comparing and Measuring	So Sound	FS Floating and Sinking
LCB The Life Cycle of Butterflies	AS Animal Studies	EP Experiments with Plants
S Soils	LW Land and Water	MT Measuring Time
C Changes	EC Electric Circuits	MM Magnets and Motors
BW Balancing and Weighing	MD Motion and Design	TP The Technology of Paper
DD Discovery Deck		

Recommended Grade Levels for STC™ Units

The National Science Resources Center (NSRC) recommends that an STC unit not be moved up or down more than one grade level from these recommendations.

1 st				2 nd				3 rd			
O	W	SL	CM	LCB	S	C	BW	PGD	RM	CT	So
4 th				5 th				6 th			
AS	LW	EC	MD	Mw	E	FC	FS	EP	MT	MM	TP

Kindergarten

Physical Science	
Characteristics of Matter and Energy	
Theme(s): Scale and Structure, Patterns of Change	
Grade-Level Concepts and Sub-Concepts	STC unit(s)
A. Observe Characteristics of Matter and Energy	
1. What are the observable characteristics of energy and matter? <ul style="list-style-type: none"> a. Takes up space b. Color c. Way it feels d. Shape 2. Can matter be measured? <ul style="list-style-type: none"> a. Ruler b. Grid/Map c. Volume d. Weight e. Density 3. Can energy be observed? <ul style="list-style-type: none"> a. Light and sound as forms of energy b. Objects in motion have energy c. Objects can move in a straight line, vibrate, or rotate 	<ul style="list-style-type: none"> a. W, SL, CM b. W, SL c. W, SL d. W, SL, CM a. CM b. c. BW* d. BW* e. BW* a. b. c.
Earth Science	
Diurnal and Seasonal Changes	
Theme(s): Energy, Patterns of Change, Scale and Structure, Systems and Interactions	
Grade-Level Concepts and Sub-Concepts	STC unit(s)
A. Sun and Moon	
1. What kinds of objects does the universe contain? <ul style="list-style-type: none"> a. Sun b. Moon 	<ul style="list-style-type: none"> a. W b. W
B. Day and Night	
1. What are the observable changes on the earth? <ul style="list-style-type: none"> a. Dark and light (shadows) b. Effects on living things 	<ul style="list-style-type: none"> a. b.
C. Seasons	
1. What are the observable seasonal changes on earth? <ul style="list-style-type: none"> a. Length of day and night b. Weather factors—temperature, clouds, precipitation, position of sun 	<ul style="list-style-type: none"> a. b. W
Life Science	
Domestic Animals and Crops in Rural and Urban Environments	
Theme(s): Systems and Interactions, Unity and Diversity	
Grade-Level Concepts and Sub-Concepts	STC unit(s)
A. A World of Environments and Living Things	
1. What is an “environment” and what organisms live in different environments? <ul style="list-style-type: none"> a. City environments and organisms b. Rural environments and organisms 	<ul style="list-style-type: none"> a. O b.

c. Wild environments and organisms 2. How does our environment provide the support we need for life?	c. O O
B. The World of Domesticated Animals and Plants 1. What are the characteristics of farm animals and pets? a. Physical characteristics b. Interdependency between farm animals and humans 2. What are the characteristics of crop plants? a. Physical characteristics b. Interdependency between crops and humans	a. b. a.. b.

Grade 1

Physical Science Matter and Forces	
Theme(s): Energy, Scale and Structure, Systems and Interactions	
Grade-Level Concepts and Sub-Concepts	STC unit(s)
A. Properties of Matter 1. How do we describe objects? a. Weight b. Mass/Structure c. Sinks/Floats d. Occupies space (has volume) e. Measuring weight/length, height/volume 2. What is the composition of matter? a. Molecules b. Characteristics...color, solubility 3. How does matter change? a. Physical—dissolving, crystallizing, melting, freezing b. Chemical—cooking, burning c. Safety issues	a. S, C, BW b. BW c. SL d. C, BW e. CM, C, BW a. b. W, SL, S, C, BW a. W, SL, C b. C c. C
B. Effects of Forces 1. What happens when force is applied to objects? a. Force as push or pull b. Force can cause motion c. Gravity	a. SL b. SL c.
Earth Science Characteristics of Earth, Sun, and Moon	
Theme(s): Scale and Structure, Patterns of Change, Systems and Interactions	
Grade-Level Concepts and Sub-Concepts	STC unit(s)
A. Earth, Sun, and Moon 1. What kinds of objects does the universe contain? a. The earth's sphericity b. The earth's movement—rotation, revolution c. The relationships of earth, sun, and moon 1. Light and shadow 2. The moon's phases 3. Eclipses 4. Scale relationships	a. b. 1. MT* 2. MT*, MT DD* 3. MT DD* 4.

5. Energy relationships 6. Time	5. 6. MT*, MT DD*
Earth Science The Water Cycle	
Theme(s): Systems and Interactions, Patterns of Change, Energy	
Grade-Level Concepts and Sub-Concepts	STC unit(s)
A. The Water Cycle 1. What is the water cycle? a. Evaporation/transpiration b. Condensation 1. Fog, clouds 2. Dew, frost c. Precipitation 1. Forms of precipitation: rain, snow, hail, sleet d. Percolation 1. Flooding 2. Ground water 2. How does water cycle affect the life forms of the earth? a. Animals/humans b. Plants	a. W, C b. 1. W 2. 1. W 1. LW*, LW DD* 2. LW*, LW DD* a. W b. W
Life Science Insects, Spiders, and Green Plants	
Theme(s): Systems and Interactions, Scale and Structure, Unity and Diversity	
Grade-Level Concepts and Sub-Concepts	STC unit(s)
A. Insects and Spiders 1. What are the characteristics of insects and spiders? a. Exoskeleton b. Number and types of appendages c. Body segments d. Habitats e. Food requirements 2. How do the body structures perform their functions, interact with each other, and contribute to the maintenance and growth of organisms? a. Locomotion b. Ingestion c. Respiration d. Sensation e. Growth/life cycle 3. How do insects, spiders, and humans interact with each other?	a. O (insects only), LCB b. O (insects only), LCB c. O (insects only), LCB d. O (insects only), LCB e. O (insects only), LCB a. O (insects only), LCB b. O (insects only), LCB c. d. O (insects only), LCB e. O (insects only), LCB 3. LCB
B. Plants 1. What are the characteristics of green plants? a. Parts and structures b. Growth and development (needs) c. Reproduction 2. How do plant structures perform their functions, interact with each other, and contribute to the maintenance and growth of the organism? a. Roots	a. O, S b. O, S c. O a. O, S

<ul style="list-style-type: none"> b. Stems c. Leaves d. Flowers e. Seeds and fruits <p>3. How do insects, spiders, plants, and humans interact with each other?</p>	<ul style="list-style-type: none"> b. O c. O <p>3. LCB</p>
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Grade 2

Physical Science	
Properties of Matter, Energy and Its Forms	
Theme(s): Energy, Systems and Interaction, Scale and Structure, Models	
Grade-Level Concepts and Sub-Concepts	STC unit(s)
<p>A. Properties of Matter</p> <ul style="list-style-type: none"> 1. What are the states of matter? <ul style="list-style-type: none"> a. Solid b. Liquid c. Gas 2. What happens when substances change? <ul style="list-style-type: none"> a. Physical b. Chemical 	<ul style="list-style-type: none"> a. W, SL, C, CT b. W, SL, C, CT c. C, CT a. W, C, CT b.
<p>B. Energy comes in Different Forms</p> <ul style="list-style-type: none"> 1. How can energy be described and classified? <ul style="list-style-type: none"> a. To observe and compare different manifestations of energy (heat, light, sound, etc.) 2. What are sources of energy? <ul style="list-style-type: none"> a. Sun b. Energy stored in chemicals (e.g., batteries) 3. What changes occur as energy is used? <ul style="list-style-type: none"> a. Transmitted b. Reflected c. Absorbed 4. How is energy used to do work and change matter? <ul style="list-style-type: none"> a. Changes requiring energy b. Changes releasing energy 	<ul style="list-style-type: none"> a. W, C, CT, So a. W, PGD b. CT
Earth Science	
Weather, Earth Materials, and Natural Resources	
Theme(s): Systems and Interactions, Patterns of Change, Energy, Scale and Structure, Unity and Diversity	
Grade-Level Concepts and Sub-Concepts	STC unit(s)
<p>A. Wind and Storms</p> <ul style="list-style-type: none"> 1. What are the physical bases of the earth's weather? <ul style="list-style-type: none"> a. Atmosphere b. Influence of sun c. Influence of water 2. What are the major phenomena of weather? <ul style="list-style-type: none"> a. Wind, lightning, water spouts, snow, rain, hurricanes, clouds, tornadoes, thunderstorms, hail, sleet 	<ul style="list-style-type: none"> a. b. W c. a. W

<p>3. What are the effects of severe weather?</p> <p>a. Safe practices, severe weather</p> <p>4. How are science and technology used to study and predict weather?</p> <p>a. Meteorologist</p> <p>b. U.S. Weather Service</p>	<p>a. W</p> <p>a. W</p> <p>b. W</p>
<p>A. Earth Materials</p> <p>1. What are the observable characteristics of rocks and minerals?</p> <p>a. Properties: smooth, hard, rough, color</p> <p>2. How are rocks and minerals classified?</p> <p>a. By composition</p> <p>b. By origin</p> <p>3. What are fossils?</p> <p>a. Formation of fossils</p> <p>b. Interpret past life forms from fossils</p>	<p>a. RM</p> <p>a. RM</p> <p>b. RM</p> <p>a. RM</p> <p>b.</p>
<p>B. Natural Resources</p> <p>1. What are some of the earth's natural resources?</p> <p>a. Metallic minerals</p> <p>b. Non-metallic minerals</p> <p>c. Fossils fuels</p> <p>d. Soils</p> <p>e. Conserving and recycling</p> <p>2. How are earth's natural resources used?</p> <p>3. What are the contributions men and women have made to the study of earth materials and natural resources?</p>	<p>a. RM</p> <p>b. RM</p> <p>c.</p> <p>d. S</p> <p>e. S</p> <p>2. S, RM</p> <p>3. S, SL</p>
<p>Life Science</p> <p>Reptiles and Birds through the Ages</p>	
<p>Theme(s): Scale and Structure, Evolution, Patterns of Change, Unity and Diversity</p>	
<p>Grade-Level Concepts and Sub-Concepts</p>	<p>STC unit(s)</p>
<p>A. Reptiles and Birds</p> <p>1. What are the characteristics of living reptiles and birds and of their fossil ancestors?</p> <p>a. Internal skeleton</p> <p>b. Specialized skin coverings (scales and feathers)</p> <p>c. Maintenance of metabolism (warm blooded, cold blooded)</p> <p>d. Reproductive strategies (egg laying)</p> <p>e. Characteristics are inherited</p> <p>2. How do the body structures perform their functions, interact with each other, and contribute to the maintenance and growth of the organism?</p> <p>a. Locomotion</p> <p>b. Embryological development</p> <p>c. Sensation</p> <p>d. Food requirements and food chains</p> <p>e. Special adaptations</p>	<p>a.</p> <p>b.</p> <p>c.</p> <p>d.</p> <p>e.</p> <p>a.</p> <p>b.</p> <p>c.</p> <p>d.</p> <p>e.</p>
<p>B. Living Things Change</p> <p>1. How do living things change over time?</p> <p>a. Populations change</p> <p>b. Extinctions and their causes</p>	<p>a. AS*, AS DD*</p> <p>b.</p>

<ul style="list-style-type: none"> c. Appearance of new species <p>2. What environmental conditions threaten the survival of species today?</p> <ul style="list-style-type: none"> a. Impact of human activities on other species b. Benefits of biological diversity for human survival 	<ul style="list-style-type: none"> c. <ul style="list-style-type: none"> a. LW*, E* b. AS* (identification of diversity only)
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Grade 3

Physical Science	
Properties of Matter, Energy and Its Forms	
Theme(s): Patterns of Change, Systems and Interaction	
Grade-Level Concepts and Sub-Concepts	STC unit(s)
A. Motion	
<ul style="list-style-type: none"> 1. What is motion? <ul style="list-style-type: none"> a. Define b. Example of motion 2. What are some basic kinds of motion? <ul style="list-style-type: none"> a. Straight b. Periodic c. Circular 3. How is motion described and categorized? <ul style="list-style-type: none"> a. Distance b. Direction (straight, periodic, and circular) c. Speed 4. How can motion be measured? <ul style="list-style-type: none"> a. Distance per unit of time b. Similar results are expected when procedures are done the same way 	<ul style="list-style-type: none"> a. MD b. MD, MD DD <ul style="list-style-type: none"> a. MD, MD DD b. c. <ul style="list-style-type: none"> a. MD, MD DD b. MD, MD DD c. MD, MD DD <ul style="list-style-type: none"> a. MD b. MD
B. Forces	
<ul style="list-style-type: none"> 1. What is force? <ul style="list-style-type: none"> a. Define force b. Examples of force 2. What are kinds of forces? <ul style="list-style-type: none"> a. Pushes and pulls by direct contact b. Gravity c. Friction d. Magnetic 3. What is the relationship of force to motion? <ul style="list-style-type: none"> a. Forces cause actions and reactions (magnets attract/repel, objects fall, balls bounce) b. Weight is a measure of force (gravity) c. Motion is measured in distance per unit of time d. Pressure is force per unit area 	<ul style="list-style-type: none"> a. MD b. MD <ul style="list-style-type: none"> a. MD b. MD, MD DD c. MD, MD DD d. MM*, MM DD* <ul style="list-style-type: none"> a. MD, MD DD b. c. MD d.
C. Machines	
<ul style="list-style-type: none"> 1. What are they and what do they do? <ul style="list-style-type: none"> a. Levers b. Inclined planes c. Wedges 	

<ul style="list-style-type: none"> a. Apparent motion of sun b. Moon and moon phases c. Stars are “fixed” in constellations d. The planets are nomadic 	<ul style="list-style-type: none"> a. MT* b. MT*, MT DD*
<p>B. The Planets</p> <ul style="list-style-type: none"> 1. What kinds of objects does the universe contain? <ul style="list-style-type: none"> a. Earth and earth motions (revolving, rotating, tilting) b. Inner-planets and moons c. Asteroids and meteors d. Outer planets and moons e. Comets 2. How do we learn about the contents and structure of the solar system? <ul style="list-style-type: none"> a. Tools of astronomer—telescope (light) b. Historical figures in astronomy 	
<p>C. The Stars</p> <ul style="list-style-type: none"> 1. What are constellations? <ul style="list-style-type: none"> a. Observing the sky b. Recognizing simple constellations 	
<p>Life Science Aquatic Life and Ecosystems</p>	
<p>Theme(s): Systems and Interactions, Stability, Evolution, Patterns of Change, Unity and Diversity</p>	
<p>Grade-Level Concepts and Sub-Concepts</p>	<p>STC unit(s)</p>
<p>A. The Aquatic Environment</p> <ul style="list-style-type: none"> 1. What are the characteristics of aquatic habitats? <ul style="list-style-type: none"> a. Fresh water b. Salt water 2. How do aquatic environments change? <ul style="list-style-type: none"> a. Natural changes b. Human influences 	<ul style="list-style-type: none"> a. AS, AS DD b. AS, AS DD a. AS, LW b. AS DD, LW
<p>B. Aquatic Life and Ecosystems</p> <ul style="list-style-type: none"> 1. What are the characteristics and adaptations of aquatic life? <ul style="list-style-type: none"> a. Locomotion b. Internal functions (respiration, metabolism) c. Life cycles 2. How do energy and materials flow in aquatic ecosystems? <ul style="list-style-type: none"> a. Niches b. Food webs c. Food pyramids (predator/prey) (parasite/host) 3. What are the responsibilities of humans to aquatic environments? 	<ul style="list-style-type: none"> a. AS, AS DD b. AS c. AS a. E* b. E* c. E* 3. E*, E DD*

Grade 4

Physical Science	
Light and Sound, Electricity and Magnetism	
Theme(s): Scale and Structure, Energy, Systems and Interaction, Models	
Grade-Level Concepts and Sub-Concepts	STC unit(s)
<p>A. Light</p> <ol style="list-style-type: none"> 1. What are properties of light? <ol style="list-style-type: none"> a. Reflection b. Refraction c. Absorption d. Diffusion e. Dispersion 2. What are the sources of light? <ol style="list-style-type: none"> a. Natural b. Artificial 3. How do we use light? <ol style="list-style-type: none"> a. Cameras/Television b. Microscope/Telescope c. Xerography d. Lasers/Holography e. Orthoscopy/Endoscopy 4. How do scientists explain light? <ol style="list-style-type: none"> a. Wave theory b. Particle theory 	<ol style="list-style-type: none"> a. Mw b. Mw c. Mw d. e. <ol style="list-style-type: none"> a. AS, Mw, Mw DD b. PGD <ol style="list-style-type: none"> a. b. Mw, Mw DD c. d. e.
<p>B. Sound</p> <ol style="list-style-type: none"> 1. What are the properties of sound? <ol style="list-style-type: none"> a. Frequency/Pitch b. Tonality c. Resonance d. Loudness e. Properties in common with light 2. What are the sources of sound? <ol style="list-style-type: none"> a. Vibrating objects 3. How do scientists explain sound? <ol style="list-style-type: none"> a. Mechanical waves arising from vibrating objects 	<ol style="list-style-type: none"> a. So b. c. d. So e. <ol style="list-style-type: none"> a. So <ol style="list-style-type: none"> a. So
<p>C. Applications of light and sound</p> <ol style="list-style-type: none"> 1. How do we use light? <ol style="list-style-type: none"> a. Scientific instruments (microscope, telescope, cameras, lasers, orthoscopy, etc.) 2. How do we use sound? <ol style="list-style-type: none"> a. Locating and identifying objects (ultrasound, echolocation, sonar) 	<ol style="list-style-type: none"> a. Mw, Mw DD
<p>D. Electricity and Magnetism</p> <ol style="list-style-type: none"> 1. What are they? What are their basic properties? What are their interactions? <ol style="list-style-type: none"> a. Define static and current b. Nature of charges c. Nature of electromagnetic fields 	<ol style="list-style-type: none"> a. EC, EC DD b. c. MM DD*

<ul style="list-style-type: none"> d. Electric circuits <ul style="list-style-type: none"> conductors non-conductors semi-conductors e. Generators and batteries <p>2. How do we use electricity and magnetism?</p> <ul style="list-style-type: none"> a. We make devices that transform electricity into heat, light, motion, and sound b. We learn to use it safely 	<ul style="list-style-type: none"> d. <ul style="list-style-type: none"> EC EC e. EC (batteries only) <p>a. EC, EC DD</p> <p>b. EC, EC DD</p>
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Earth Science

Earth's Structure and Landforms

Theme(s): Scale and Structure, Patterns of Change, Evolution, Unity and Diversity

Grade-Level Concepts and Sub-Concepts	STC unit(s)
A. Earth's Structure and Landforms	
<p>1. What is the earth's structure?</p> <ul style="list-style-type: none"> a. Core, mantle, crust b. Crustal rocks—origin and classification c. Sedimentary strata d. Rock cycle <p>2. How have geologic processes shaped the earth's present features?</p> <ul style="list-style-type: none"> a. Processes: earthquakes, uplift, volcanoes, weather, erosion b. Features: Plains, deserts, mountains, valleys, wetlands <p>3. How do scientists study the earth?</p> <ul style="list-style-type: none"> a. Gaining knowledge through careful observation b. Keeping accurate and detailed records c. Using technology d. Creating explanations (theories) that explain the data 	<ul style="list-style-type: none"> a. LW DD b. c. RM d. RM <p>a. RM, LW, LW DD</p> <p>b. LW, LW DD</p> <p>a. RM, LW, LW DD</p> <p>b. RM, LW, LW DD</p> <p>c. RM, LW, LW DD</p> <p>d. RM, LW, LW DD</p>

Earth Science

Climate

Theme(s): Scale and Structure, Patterns of Change, Evolution, Systems and Interaction, Energy

Grade-Level Concepts and Sub-Concepts	STC unit(s)
A. Climate	
<p>1. What is climate and how does it differ from weather?</p> <ul style="list-style-type: none"> a. Climate is weather averaged over a period of time b. Classifying earth's climate: tropical, polar, temperate, arid <p>2. What are the causes of weather patterns?</p> <ul style="list-style-type: none"> a. Topography/latitude/altitude and persistent weather pattern b. Seasons as related to earth's tilt and orbit around the sun c. Water and land distribution d. Sun as a variable star 	

Life Science	
Terrestrial Life and Ecosystems	
Theme(s): Systems and Interactions, Stability, Evolution, Patterns of Change, Unity and Diversity	
Grade-Level Concepts and Sub-Concepts	STC unit(s)
<p>A. The Terrestrial Environment</p> <p>1. What are the characteristics of terrestrial habitats?</p> <ul style="list-style-type: none"> a. Prairie b. Desert c. Rain Forest d. Wetlands <p>2. How do terrestrial environments change?</p> <ul style="list-style-type: none"> a. Natural succession (pond to forest, meadow to forest, beaches to dune) b. Human induced changes (dams, highways, building, communication networks, power plants, etc.) 	<p>d. AS</p> <p>a.</p> <p>b. AS DD, LW, LW DD, E, E DD</p>
<p>B. Terrestrial Life and Ecosystems</p> <p>1. What are the characteristics of terrestrial life and how do organisms adapt to terrestrial ecosystems?</p> <ul style="list-style-type: none"> a. Locomotion b. Defense c. Activity cycles (hibernation, estivation, nocturnal, diurnal, migration) d. Life cycles <p>2. How do energy and nutrients flow in terrestrial ecosystems?</p> <ul style="list-style-type: none"> a. Niches b. Food webs c. Food pyramids (predator, prey, parasite, host) <p>3. What are the responsibilities of humans toward terrestrial ecosystems?</p>	<p>a. AS, AS DD, E, E DD</p> <p>b.</p> <p>c. AS, AS DD, E, E DD</p> <p>d. AS, E, E DD</p> <p>a. E</p> <p>b. E</p> <p>c. E</p> <p>3. E, E DD</p>

Grade 5

Physical Science	
Characteristics of Energy	
Theme(s): Energy, Systems and Interaction	
Grade-Level Concepts and Sub-Concepts	STC unit(s)
<p>A. Sources and Transformation</p> <p>1. What do we do with energy and what changes occur when we use it?</p> <ul style="list-style-type: none"> a. Use b. Transform/Convert c. Forms d. Living systems/non-living systems 	<p>b. EC, MD, MD DD, E</p> <p>c. EC, EC DD, MD, MD DD, E, EP, MT, MM</p> <p>d. EC, EC DD, MD, MD DD, E, EP, MT, MM</p>
<p>B. Heat</p> <p>1. What is it? Where does it come from? What are its properties?</p> <ul style="list-style-type: none"> a. Definition 	

Life Science	
Systems of the Human Body and Human Life Cycle	
Theme(s): Scale and Structure, Systems and Interactions, Energy, Models	
Grade-Level Concepts and Sub-Concepts	STC unit(s)
<p>A. Human Life</p> <p>1. What are the characteristics of our species and how are we classified?</p> <ul style="list-style-type: none"> a. Internal skeleton (vertebrate) b. Mammal characteristics c. Primate characteristics 	
<p>B. Systems of the human body</p> <p>1. How do the body structures perform their function, interact with each other, and contribute to the maintenance and growth of the human organism?</p> <ul style="list-style-type: none"> a. Respiration* b. Circulation* c. Digestion* d. Reproduction and inheritance** e. Excretion** f. Muscular and skeletal system* g. Endocrine and nervous* <p>* to be introduced only ** to be studied extensively by grade 5</p>	

Grade 6

Physical Science	
Force and Motion	
Theme(s): Energy, Patterns of Change, Systems and Interaction	
Grade-Level Concepts and Sub-Concepts	STC unit(s)
<p>A. Force and Motion</p> <p>1. How do forces act on matter and cause motion?</p> <ul style="list-style-type: none"> a. All things in the universe are in motion and things move in different ways: straight, zigzag, around and around, back and forth, fast and slow. b. A push or pull will change how something is moving. c. Changes in speed or direction of motion are caused by forces. The greater the force, the greater the change in motion, and the more massive an object the less effect a given force will have. d. All motion is relative to whatever frame of reference is chosen, for there is no motionless frame from which to judge all motion. e. Whenever one thing exerts a force on another, an equal amount of force is exerted back on it. f. From Newton's perspective, every object exerts gravitational force on every other object. The force depends on how much mass the objects have and on how far apart they are. 	<p>a. MT, MT DD, MM</p> <p>b. MT, MM</p> <p>c.</p> <p>d. MT, MM</p> <p>e.</p> <p>f.</p>

<p>g. Acceleration describes a change in an object's speed and/or direction.</p> <p>h. Acceleration depends on the size of the force acting on an object and on its mass.</p>	<p>g.</p> <p>h.</p>
<p>B. Energy, Force, and Work</p> <p>1. What is the relationship between energy, force, and work?</p> <p>a. An object or organism that has energy can work.</p> <p>b. If work is done on an object or organism, energy is transferred.</p> <p>c. The total of matter and energy is conserved in all interactions.</p>	
<p>Earth Science</p> <p>Astronomy</p>	
<p>Theme(s): Scale and Structure, Evolution, Energy, Stability</p>	
<p>Grade-Level Concepts and Sub-Concepts</p>	<p>STC unit(s)</p>
<p>A. The Solar System</p> <p>1. What are the effects of gravitational force in the solar system?</p> <p>a. Orbital shape and speed</p> <p>b. Tides</p> <p>c. Spherical shape of planets and moons</p> <p>2. How is the solar system organized?</p> <p>a. Sun and planets</p> <p>b. Satellites</p> <p>c. Asteroids and comets</p>	<p>a.</p> <p>b. MT DD</p> <p>c.</p>
<p>B. Stars</p> <p>1. What kinds of stars?</p> <p>a. Types: giant, dwarf, binary, black hole</p> <p>b. Distribution: star maps, scales, constellations and their myths</p> <p>2. How have stars evolved?</p> <p>a. Stars began with nebula</p> <p>b. H-R diagram</p> <p>c. Life cycle of sun</p> <p>3. How do we learn about stars?</p> <p>a. Electromagnetic spectrum and its analysis</p> <p>b. Observatories and work of astronomers</p>	
<p>C. Galaxies</p> <p>1. What kinds of objects does the universe contain and how do these objects relate to one another?</p> <p>a. Types</p> <p>b. Distribution</p> <p>2. How has the universe evolved?</p> <p>a. Present and past theories of astronomers</p> <p>b. The future of the universe</p> <p>3. How do we learn about the universe?</p> <p>a. Limitations of data (light from stars, temperature from space)</p>	

Earth Science Geology	
Theme(s): Evolution, Systems and Interaction	
Grade-Level Concepts and Sub-Concepts	STC unit(s)
A. Earth's History 1. What is the history of the earth? a. Geologic time b. Change in earth over time 1. Continental drift/plate tectonics 2. Glaciation and climate variations 3. Extinction and natural disasters	1. LW DD* 2. LW* (glaciation only) 3. LW DD*
Earth Science Oceanography/Meteorology	
Theme(s): Patterns of Change, Systems and Interaction, Scale and Structure, Energy	
Grade-Level Concepts and Sub-Concepts	STC unit(s)
A. Forecasting Weather and Climate 1. How do we predict the weather? a. Air masses and patterns of movement b. Using clouds to predict weather c. Instruments 2. How do we alter the weather? a. Cloud seeding b. Cutting forest c. City heat islands 3. How do we predict climate changes? a. El Niño and La Niña b. Global warming c. Greenhouse d. Glacial periods and interglacial changes	a. b. E DD c. E DD
Life Science Systems of the Human Body and Human Performance	
Theme(s): Scale and Structure, Systems and Interactions, Energy, Stability, Patterns of Change	
Grade-Level Concepts and Sub-Concepts	STC unit(s)
A. Human Performance 1. In what ways are human lives served and enriched by special abilities? What areas of human performance most interest you as an individual? (e.g., cycling, running, bobsledding, musical performance, performing arts, weight lifting, baseball, basketball, football) 2. How do the various areas of human performance relate to the structure, function, maintenance, and growth of the human body? a. Muscular 1. Exercise 2. Endurance 3. Strength 4. Velocity/speed 5. Acceleration 6. Balance	1. 2. 3. 4. 5. 6.

<ul style="list-style-type: none"> 7. Coordination 8. Diet 9. Flexibility b. Nervous System <ul style="list-style-type: none"> 1. Hand coordination (dexterity) 2. Visual acuity/tracking 3. Reflex arcs/conditioned response training 4. Movement 5. Sensory perception 6. Balance c. Endocrine <ul style="list-style-type: none"> 1. Adrenal glands (action) 2. Pituitary (growth) 3. Thyroid (metabolism) 4. Sex hormones 5. Effects of aging d. Skeletal <ul style="list-style-type: none"> 1. Function 2. Name and location 3. Composition 4. Diet 5. Movement 6. Effects of aging 	<ul style="list-style-type: none"> 7. 8. FC, FC DD 9. 1. 2. 3. 4. FC, FC DD 5. 6.
<p>B. Variation in Human Performance</p> <ul style="list-style-type: none"> 1. How can the variance of individual performance be explained? <ul style="list-style-type: none"> a. Age b. Diet c. Training d. Medication e. Gender f. Stature (morphs) 2. What factors can interfere with an individual's performance? <ul style="list-style-type: none"> a. Injury—rehabilitation b. Disease—metabolic, infectious c. Diet d. Drugs e. Exercise f. Fatigue/rest g. Degenerative diseases h. Inherited conditions i. Allergies 	<ul style="list-style-type: none"> a. b. FC, FC DD c. d. e. f. a. b. FC c. FC, FC DD d. e. f. g. h. i.