

**A Correlation of the
Science and Technology for Children Curriculum (STC)
to the
Pennsylvania Academic Standards
For Science and Technology**

Prepared by Science Matters Inc.

The following tables are provided to give a quick visual guide to the correlation of the STC modules with Pennsylvania's Science and Technology Standards. The STC modules can be used in grade level that are one level above or below the recommended grade level suggested by the manufacturer. Therefore, several titles from 5th grade have been evaluated for meeting the 4th grade requirements.

The STC modules in grades 4-6 have Discovery Decks that include a set of extensions for the unit. Whenever a Discovery Deck Activity meets the standard, an abbreviation of DD will follow the Module Title.

3.1 Unifying Themes Grade 4

3.1.4. GRADE 4	STC Units and lessons
<p>A. Know that natural and human-made objects are made up of parts.</p> <ul style="list-style-type: none"> • Identify and describe what parts make up a system. <ul style="list-style-type: none"> • Identify system parts that are natural and human-made (e.g., ball point pen, simple electrical circuits, plant anatomy). <ul style="list-style-type: none"> • Describe the purpose of analyzing systems. • Know that technologies include physical technology systems (e.g., construction, manufacturing, transportation), informational systems and biochemical-related systems. <p>B. Know models as useful simplifications of objects or processes.</p> <ul style="list-style-type: none"> • Identify different types of models. 	<p>Organisms 1,4,5,11,12 Butterflies 7,12,15 Balancing & Weighing 3,4,5,6,14 Soils 3,9,10,13 Plant Growth Sound Animal Studies Land & Water Electric Circuits Motion & Design Ecosystems Floating & Sinking</p> <p>Organisms 1,3 Butterflies 7,12 Balancing & Weighing 14 Soils 2,10,11,13 Plant Growth Sound Animal Studies Land & Water Electric Circuits Motion & Design Ecosystems Floating & Sinking</p> <p>Organisms 4,5,11,12 Weather 11,12,13,15</p>

<ul style="list-style-type: none"> • Identify and apply models as tools for prediction and insight. <ul style="list-style-type: none"> • Apply appropriate simple modeling tools and techniques. <ul style="list-style-type: none"> • Identify theories that serve as models (e.g., molecules). <p>C. Illustrate patterns that regularly occur and reoccur in nature.</p> <ul style="list-style-type: none"> • Identify observable patterns (e.g., growth patterns in plants, crystal shapes in minerals, climate, structural patterns in bird feathers). <ul style="list-style-type: none"> • Use knowledge of natural patterns to predict next occurrences (e.g., seasons, leaf patterns, lunar phases). 	<p>Butterflies 9,11 Animal Studies Land & Water Ecosystems Floating & Sinking</p> <p>Weather 11,12,15 Plant Growth Sound Land & Water Electric Circuits Motion & Design Microworlds Ecosystems Floating & Sinking</p> <p>Weather 11,12,13,15 Butterflies 11 Soils 2, 6,13 Plant Growth Sound Land & Water Electric Circuits Motion & Design Microworlds Ecosystems Floating & Sinking</p> <p>Organisms 1,2,3,4,5,6,8,10,11,12,13,14,15 Weather 1,2,3,4,5,11,12,13,15 Butterflies 4,5,6,7,8,9,11,15 Soils 2,3,4,6,9,10,13,14,15,16 Plant Growth Rocks & Minerals Sound Animal Studies Land & Water Electric Circuits Motion & Design Microworlds Ecosystems</p> <p>Organisms 6,11,12 Butterflies 4,5,8,9,15 Soils 2, 6,10,13,14,15 Plant Growth Rocks & Minerals Sound</p>
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<p>D. Know that scale is an important attribute of natural and human made objects, events and phenomena.</p> <ul style="list-style-type: none"> • Identify the use of scale as it relates to the measurement of distance, volume and mass. • Describe scale as a ratio (e.g., map scales). • Explain the importance of scale in producing models and apply it to a model. <p>E. Recognize change in natural and physical systems.</p> <ul style="list-style-type: none"> • Recognize change as fundamental to science and technology concepts. • Examine and explain change by using time and measurement. • Describe relative motion. • Describe the change to objects caused by heat, cold, light or chemicals. 	<p>Animal Studies Land & Water Electric Circuits Motion & Design Microworlds Ecosystems</p> <p>Land & Water Motion & Design</p> <p>Soils 2,5,6,7,10,13,16</p> <p>Organisms 3,4,6,11,12 Weather 3,5,11,16 Soils 5,6,9,10,13,16</p>
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3.2 Inquiry and Design Grade 4

3.2.4. GRADE 4	STC Units and lessons
<p>A. Identify and use the nature of scientific and technological knowledge.</p> <ul style="list-style-type: none"> • Distinguish between a scientific fact and a belief. • Provide clear explanations that account for observations and results. • Relate how new information can change existing perceptions. 	<p>All STC Modules</p> <p>All STC Modules</p> <p>Electric Circuits DD Microworlds DD Ecosystems Food Chemistry DD Balancing & Weighing 13,15</p>
<p>B. Describe objects in the world using the five senses.</p> <ul style="list-style-type: none"> • Recognize observational descriptors from each of the five senses (e.g., see-blue, feel-rough). • Use observations to develop a descriptive vocabulary. 	<p>All STC Modules</p> <p>All STC Modules</p>
<p>C. Recognize and use the elements of scientific inquiry to solve problems.</p> <ul style="list-style-type: none"> • Generate questions about objects, organisms and/or events that can be answered through scientific investigations. • Design an investigation. 	<p>All STC Modules</p> <p>Balancing & Weighing 16 Soils 11 Sound Animal Studies Land & Water Electric Circuits Motion & Design Microworlds Food Chemistry Floating & Sinking</p>
<ul style="list-style-type: none"> • Conduct an experiment. 	<p>Weather 7,8,9,10,11,12 Solids & Liquids Soils 2,5,6,8,9,10,11,12,14,15 Changes</p>

<ul style="list-style-type: none"> • State a conclusion that is consistent with the information. <p>D. Recognize and use the technological design process to solve problems.</p> <ul style="list-style-type: none"> • Recognize and explain basic problems. <ul style="list-style-type: none"> • Identify possible solutions and their course of action. <ul style="list-style-type: none"> • Try a solution. <ul style="list-style-type: none"> • Describe the solution, identify its impacts and modify if necessary. <ul style="list-style-type: none"> • Show the steps taken and the results. 	<p>Balancing & Weighing 2,3,4,6,7,8,9,10,16 Rocks & Minerals Chemical Tests Sounds Animal Studies Land & Water Electric Circuits Motion & Design Microworlds Ecosystems Food Chemistry Floating & Sinking</p> <p>All STC Modules</p> <p>Solids & Liquids Balancing & Weighing 2,3,4,5,6,7,8,9,16 Sound Motion & Design Floating & Sinking</p> <p>Solids & Liquids Balancing & Weighing 2,3,4,5,6,7,8,9,16 Sound Motion & Design Floating & Sinking</p> <p>Solids & Liquids Balancing & Weighing 2,3,4,5,6,7,8,9,16 Sound Motion & Design Floating & Sinking</p> <p>Solids & Liquids Balancing & Weighing 2,3,4,5,6,7,8,9,16 Sound Motion & Design Floating & Sinking</p> <p>Solids & Liquids Balancing & Weighing,2,3,4,5,6,7,8,9,16 Sound Motion & Design Floating & Sinking</p>
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3.3 Biological Sciences Grade 4

3.3.4. GRADE 4	STC Units and lessons
<p>A. Know the similarities and differences of living things.</p> <ul style="list-style-type: none"> • Identify life processes of living things (e.g., growth, digestion, react to environment). • Know that some organisms have similar external characteristics (e.g., anatomical characteristics; appendages, type of covering, body segments) and that similarities and differences are related to environmental habitat. • Describe basic needs of plants and animals. <p>B. Know that living things are made up of parts that have specific functions.</p> <ul style="list-style-type: none"> • Identify examples of unicellular and multicellular organisms. • Determine how different parts of a living thing work together to make the organism function. <p>C. Know that characteristics are inherited and, thus, offspring closely resemble their parents.</p> <ul style="list-style-type: none"> • Identify characteristics for animal and plant survival in different climates. • identify physical characteristics that appear in both parents and offspring and differ between families, strains or species. 	<p>Organisms 1,3,4,7,8,9,10,13,14,16 Butterflies 3,7,10,11,12,15 Soils 2,9,10,13,16 Plant Growth Animals Studies Microworlds Ecosystems</p> <p>Organisms 1,2,4,5,6,7,8,9,10,13,14,15,16 Butterflies 4,5,7,11,14,15 Soils 10,11,13,16 Plant Growth Animals Studies Microworlds Ecosystems</p> <p>Organisms 1,3,4,5,6,7,8,9,10,13,14,15,16 Butterflies 3,5,10,11,12,15 Soils 9,10,13,16 Plant Growth Animals Studies Microworlds Ecosystems</p> <p>Microworlds</p> <p>Butterflies 4,5,6,7,10,11,14,15 Plant Growth Animal Studies Microworlds Ecosystems</p> <p>Animal Studies Microworlds</p>

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| <p>D. Identify changes in living things over time.</p> <ul style="list-style-type: none">• Compare extinct life forms with living organisms. | |
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3.4 Physical Science, Chemistry and Physics Grade 4

3.4.4. GRADE 4	STC Units and lessons
<p>A. Recognize basic concepts about the structure and properties of matter.</p> <ul style="list-style-type: none"> • Describe properties of matter (e.g., hardness, reactions to simple chemical tests). • Know that combining two or more substances can make new materials with different properties. • Know different material characteristics (e.g., texture, state of matter, solubility). <p>B. Know basic energy types, sources and conversions.</p> <ul style="list-style-type: none"> • Identify energy forms and examples (e.g., sunlight, heat, stored, motion). • Know the concept of the flow of energy by measuring flow through an object or system. • Describe static electricity in terms of attraction, repulsion and sparks. • Apply knowledge of the basic electrical circuits to design and construction simple direct current circuits. • Classify materials as conductors and nonconductors. • Know and demonstrate the basic properties of heat by producing it in a variety of ways. 	<p>Solids & Liquids Changes Balancing & Weighing 11,12,15 Rocks & Minerals Chemical Tests Food Chemistry</p> <p>Solids & Liquids Changes Chemical Tests</p> <p>Solids & Liquids Soils 1,3,4,5,6,8,11,12,14,15,16 Changes Balancing & Weighing 7,8,9,10,11,12,13,14,15 Rocks & Minerals Chemical Tests</p> <p>Plant Growth Electric Circuits Motion & Design</p> <p>Electric Circuits DD</p> <p>Electric Circuits</p> <p>Electric Circuits</p>

<ul style="list-style-type: none"> • Know the characteristics of light (e.g., reflection, refraction, absorption) and use them to produce heat, color or a virtual image. <p>C. Observe and describe different types of force and motion.</p> <ul style="list-style-type: none"> • Identify characteristics of sound (pitch, loudness and echoes) • Recognize forces that attract or repel other objects and demonstrate them. • Describe various types of motions. • Compare the relative movement of objects and describe types of motion that are evident. • Describe the position of an object by locating it relative to another object or the background (e.g., geographic direction, left, up). <p>D. Describe the composition and structure of the universe and the earth's place in it.</p> <ul style="list-style-type: none"> • Recognize earth's place in the solar system. • Explain and illustrate the causes of seasonal changes. • Identify planets in our solar system and their general characteristics. • Describe the solar system motions and use them to explain time (e.g., days, seasons), major lunar phases and eclipses. 	<p>Weather 9 Microworlds</p> <p>Sounds</p> <p>Electric Circuits DD Solids & Liquids Rocks & Minerals</p> <p>Solids & Liquids Balancing & Weighing 1,3,5,6 Sounds Motion & Design Floating & Sinking</p> <p>Solids & Liquids Balancing & Weighing 1,2,3,4,5,6,7 Sounds Motion & Design Floating & Sinking</p> <p>Measuring Time</p>
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3.5 Earth Sciences Grade 4

3.5.4. GRADE 4	STC Units and lessons
<p>A. Know basic landforms and earth history.</p> <ul style="list-style-type: none"> • Describe earth processes (e.g., rusting, weathering, erosion) that have affected selected physical features in students' neighborhoods. • Identify various earth structures (e.g., mountains, faults, drainage basins) through the use of models. • Identify the composition of soil as weathered rock and decomposed organic remains. • Describe fossils and the type of environment they lived in (e.g., tropical, aquatic, desert). <p>B. Know types and uses of earth materials.</p> <ul style="list-style-type: none"> • Identify uses of various earth materials (e.g., buildings, highways, fuels, growing plants). • Identify and sort earth materials according to a classification key (e.g., soil/rock type). <p>C. Know basic weather elements.</p> <ul style="list-style-type: none"> • identify cloud types. • Identify weather patterns from data charts (including temperature, wind direction and speed, precipitation) and graphs of the data. • Explain how the different seasons effect plants, animals, food availability and daily human life. 	<p>Rocks & Minerals Land & Water</p> <p>Land & Water</p> <p>Soils 1,2,3,6,8,14,15 Rocks & Minerals Land & Water? Ecosystems ?</p> <p>Soils 5,9,10 Rocks & Minerals Land & Water?</p> <p>Soils 3,4,6,8,12,14,15,16 Rocks & Minerals</p> <p>Weather 3,13,14</p> <p>Weather 3,15,16</p> <p>Animal Studies? Plant Growth? Ecosystems</p>

<p>D. Recognize the earth's different water resources.</p> <ul style="list-style-type: none"> • Know that approximately three-fourths of the earth is covered by water. • identify and describe types of fresh and salt-water bodies. • Identify examples of water in the form of solid, liquid and gas on or near the surface of the earth. • Explain and illustrate evaporation and condensation. • Recognize other resources available from water (e.g., energy, transportation, minerals, food). 	<p>Ecosystems?</p> <p>Ecosystems?</p> <p>Weather 3,10,11,13,14</p> <p>Weather 11 Land & Water Changes</p> <p>Ecosystems?</p>
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3.6 Technology Education Grade 4

3.6.4. GRADE 4	STC Units and lessons
<p>A. Know that biotechnologies relate to propagating, growing, maintaining, adapting, treating and converting.</p> <ul style="list-style-type: none"> • Identify agricultural and industrial production processes that involve plants and animals. • Identify waste management treatment processes. • Describe how knowledge of the human body influences or impacts ergonomic design. • Describe how biotechnology has impacted various aspects of daily life (e.g., health care, agriculture, waste treatment). <p>B. Know that information technologies involve encoding, transmitting, receiving, storing, retrieving and decoding.</p> <ul style="list-style-type: none"> • Identify electronic communication methods that exist in the community (e.g., digital cameras, telephone, internet, television, fiber optics). • Identify graphic reproduction methods. • Describe appropriate image generating techniques (e.g., photography, video). • Demonstrate the ability to communicate an idea by applying basic sketching and drawing techniques. 	<p>Plant Growth Microworlds DD Ecosystems</p> <p>Microworlds DD Ecosystems DD</p> <p>Motion & Design Floating & Sinking DD</p> <p>Microworlds DD</p> <p>Balancing & Weighing 11,14 Weather 7,8,10,12</p> <p>Organisms 1,2,3,4,5,6,7,8,9,10,11,12 Weather 11,12 Butterflies 1,6,7,8,10 Soils 1,5,6,7,8,9,12,13,14,15,16 Plant Growth Rocks & Minerals Animal Studies Land & Water Electric Circuits Motion & Design Microworlds Ecosystems</p>

<p>C. Know physical technologies of structural design, analysis and engineering, finance, production, marketing, research and design.</p> <ul style="list-style-type: none"> • Identify and group a variety of construction tasks. • Identify the major construction systems present in a specific local building. • Identify specific construction systems that depend on each other in order to complete a project. • Know skills used in construction. • Identify examples of manufactured goods present in the home and school. • Identify basic resources needed to produce a manufactured item. • Identify basic component operations in a specific manufacturing enterprise (e.g., cutting, shaping, attaching). • Identify waste and pollution resulting from a manufacturing enterprise. • Explain and demonstrate the concept of manufacturing (e.g., assemble a set of papers or ball point pens sequentially, mass produce an object). • Identify transportation technologies of propelling, structuring, suspending, guiding, controlling and supporting. • Identify and experiment with simple machines used in transportation systems. • Explain how improved transportation systems have changed society. 	<p>Balancing & Weighing 4</p> <p>Motion & Design</p> <p>Soils 5 Motion & Design Floating & Sinking DD</p> <p>Soils 5 Motion & Design</p> <p>Motion & Design</p> <p>Ecosystems</p> <p>Motion & Design</p> <p>Motion & Design Floating & Sinking?</p> <p>Motion & Design</p>
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3.7 Technological Devices Grade 4

3.7.4. GRADE 4	STC Units and lessons
<p>A. Explore the use of basic tools, simple materials and techniques to safely solve problems.</p> <ul style="list-style-type: none"> • Describe the scientific principles on which various tools are based. • Group tools and machines by their function. • Select and safely apply appropriate tools and materials to solve simple problems. <p>B. Select appropriate instruments to study materials.</p> <ul style="list-style-type: none"> • Develop simple skills to measure, record, cut and fasten. <ul style="list-style-type: none"> • Explain appropriate instrument selection for specific tasks. <p>C. Identify basic computer operations and concepts.</p> <ul style="list-style-type: none"> • Identify the major parts necessary for a computer to input and output data. • Explain and demonstrate the basic use of input and output devices (e.g., keyboard, monitor, printer, mouse). • Explain and demonstrate the use of external and internal storage devices (e.g., disk 	<p>Balancing & Weighing 3,4,6 Weather 4,5,10</p> <p>All STC Modules</p> <p>All STC Modules use measurement & recording Weather 4,5,6,7,8,10 Butterflies 9,11,13 Balancing & Weighing 1,3,7,9,10,11 Plant Growth Sound Electric Circuits Motion & Design Ecosystems</p> <p>Comparing & Measuring Rocks & Minerals Sound Electric Circuits Weather 3,4,5,9,10 Motion & Design Microworlds</p> <p>Computers can be used with all STC modules</p>

<p>drive, CD drive).</p> <p>D. Use basic computer software.</p> <ul style="list-style-type: none"> • Apply operating system skills to perform basic computer tasks. • Apply basic word processing skills. • Identify and use simple graphic and presentation graphic materials generated by the computer. • Apply specific instructional software. <p>E. Identify basic computer communications systems.</p> <ul style="list-style-type: none"> • Apply a web browser. • Apply basic electronic mail functions. • Use on-line searches to answer age appropriate questions. 	<p>Computers can be used with all STC modules</p> <p>Computers can be used with all STC modules</p> <p>Computers can be used with all STC modules</p> <p>Animal Studies Computers can be used with all STC modules</p>
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3.8 Science, Technology and Human Endeavors Grade 4

3.8.4. GRADE 4	STC Units and lessons
<p>A. Know that people select, create and use science and technology and that they are limited by social and physical restraints.</p> <ul style="list-style-type: none"> • Identify and describe positive and negative impacts that influence or result from new tools and techniques. • Identify how physical technology (e.g., construction, manufacturing, transportation), informational technology and biotechnology are used to meet human needs. • Describe how scientific discoveries and technological advancements are related. • Identify interrelationships among technology, people and their world. • Apply the technological design process to solve a simple problem. <p>B. Know how human ingenuity and technological resources satisfy specific human needs and improve the quality of life.</p> <ul style="list-style-type: none"> • Identify and distinguish between human needs and improving the quality of life. • Identify and distinguish between natural and human-made resources. 	<p>Sound Land & Water Electric Circuits DD Microworlds Ecosystems</p> <p>Sound Land & Water Motion & Design Microworlds Ecosystems DD Food Chemistry Floating & Sinking DD</p> <p>Electric Circuits DD Motion & Design DD Microworlds DD</p> <p>Sound Soils 11 Electric Circuits DD Motion & Design DD Microworlds DD Ecosystems Floating & Sinking DD</p> <p>Electric Circuits Motion & Design</p> <p>Sound Soils 11,13 Electric Circuits Motion & Design Ecosystems Food Chemistry</p> <p>Organisms 1,2 Weather 2,5,9,10,12</p>

<ul style="list-style-type: none"> • Describe a technological invention and the resources that were used to develop it. <p>C. Know the pros and cons of possible solutions to scientific and technological problems in society.</p> <ul style="list-style-type: none"> • Compare the positive and negative expected and unexpected impacts of technological change. <ul style="list-style-type: none"> • Identify and discuss examples of technological change in the community that have both positive and negative impacts. 	<p>Soils 11,13,16 Plant Growth</p> <p>Rocks & Minerals Chemical Tests Animal Studies Land & Water Electric Circuits DD Microworlds Ecosystems Food Chemistry Floating & Sinking DD</p> <p>Motion & Design Floating & Sinking DD</p> <p>Sound Land & Water Electric Circuits DD Ecosystems</p>
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