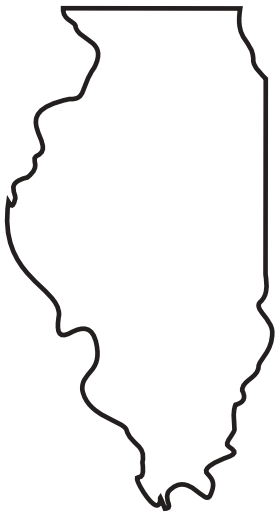

A Correlation of
Science and Technology for Children®
and
Science and Technology Concepts for Middle Schools™
to the
Illinois Learning Standards for Science

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This document gives a quick visual guide to the alignment of Science and Technology for Children® (STC®) and Science and Technology Concepts for Middle Schools™ (STC/MS™) units with the Illinois Learning Standards for Science. Although each unit was developed for use at a specific grade level, there is some flexibility in grade placement — any unit may be used a grade above or below the one for which it was developed. Because of this flexibility, many curriculum planners prefer to think of each unit as covering a three-level band of grades (as indicated in the chart below). In addition, STC/MS units can be used at grade 9 as well.

All fourth-grade through sixth-grade STC unit kits include a Discovery Deck, a set of extensions for the unit. When a Discovery Deck meets or helps to meet a learning standard, the abbreviation "DD" will follow the unit abbreviation.

STC® and STC/MS™
Recommended Grade Levels and Unit Abbreviations

The National Science Resources Center (NSRC), developer of the STC and STC/MS programs, recommends the units be used within the following grade ranges.

	Grades	Life and Earth Science		Physical Science and Technology	
STC	K–2	*Organisms* (O)	*Weather* (W)	*Solids and Liquids* (SL)	*Comparing and Measuring* (CM)
	1–3	*The Life Cycle of Butterflies* (LCB)	*Soils* (S)	*Changes* (C)	*Balancing and Weighing* (BW)
	2–4	*Plant Growth and Development* (PGD)	*Rocks and Minerals* (RM)	*Chemical Tests* (CT)	*Sound* (So)
	3–5	*Animal Studies** (AS)	*Land and Water** (LW)	*Electric Circuits** (EC)	*Motion and Design** (MD)
	4–6	*Microworlds** (Mw)	*Ecosystems** (E)	*Food Chemistry** (FC)	*Floating and Sinking** (FS)
	5–7	*Experiments with Plants** (EP)	*Measuring Time** (MT)	*Magnets and Motors** (MM)	*The Technology of Paper** (TP)
STC/MS	6–8**	*Human Body Systems* (HBS)	*Catastrophic Events* (CE)	*Properties of Matter* (POM)	*Energy, Machines, and Motion* (EMM)
		Organisms—From Macro to Micro (OMM)	*Earth in Space* (ES)	*Light* (L)	*Electrical Energy and Circuit Design* (EECD)

*Unit kit includes a Discovery Deck (DD).
**STC/MS units may also be used at grade 9.

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State Goal 11: Understand the processes of scientific inquiry and technological design to investigate questions, conduct experiments and solve problems.	
As a result of their schooling students will be able to:	
Learning Standard A. Know and apply the concepts, principles and processes of scientific inquiry.	
Early Elementary	**STC Unit(s)**
11.A.1a Describe an observed event.	All STC units and Discovery Decks
11.A.1b Develop questions on scientific topics.	All STC units and Discovery Decks
11.A.1c Collect data for investigations using measuring instruments and technologies.	All STC units
11.A.1d Record and store data using available technologies.	Compatible with all STC units
11.A.1e Arrange data into logical patterns and describe the patterns.	All STC units
11.A.1f Compare observations of individual and group results.	All STC units and Discovery Decks
Late Elementary	**STC Unit(s)**
11.A.2a Formulate questions on a specific science topic and choose the steps needed to answer the questions.	All STC units
11.A.2b Collect data for investigations using scientific process skills including observing, estimating and measuring.	All STC units
11.A.2c Construct charts and visualizations to display data.	All STC units
11.A.2d Use data to produce reasonable explanations.	All STC units
11.A.2e Report and display the results of individual and group investigations.	All STC units
Middle/Junior High School	**STC/MS Unit(s)**
11.A.3a Formulate hypotheses that can be tested by collecting data.	All STC/MS units
11.A.3b Conduct scientific experiments that control all but one variable.	All STC/MS units
11.A.3c Collect and record data accurately using consistent measuring and recording techniques and media.	All STC/MS units
11.A.3d Explain the existence of unexpected results in a data set.	All STC/MS units
11.A.3e Use data manipulation tools and quantitative (e.g., mean, mode, simple equations) and representational methods (e.g., simulations, image processing) to analyze measurements.	All STC/MS units
11.A.3f Interpret and represent results of analysis to produce findings.	All STC/MS units
11.A.3g Report and display the process and results of a scientific investigation.	All STC/MS units
Learning Standard B. Know and apply the concepts, principles and processes of technological design.	
Early Elementary	**STC Unit(s)**
11.B.1a Given a simple design problem, formulate possible	CM, C, BW, So

solutions.	
11.B.1b Design a device that will be useful in solving the problem.	CM, BW, So
11.B.1c Build the device using the materials and tools provided.	CM, BW, So
11.B.1d Test the device and record results using given instruments, techniques and measurement methods.	CM, BW, So
11.B.1e Report the design of the device, the test process and the results in solving a given problem.	CM, BW, So
Late Elementary	**STC Unit(s)**
11.B.2a Identify a design problem and propose possible solutions.	So, LW, MD, FS, MT, MM, TP
11.B.2b Develop a plan, design and procedure to address the problem identifying constraints (e.g., time, materials, technology).	So, LW, MD, FS, MT, MM, TP
11.B.2c Build a prototype of the design using available tools and materials.	So, LW, MD, FS, MT, MM, TP
11.B.2d Test the prototype using suitable instruments, techniques and quantitative measurements to record data.	So, LW, MD, FS, MT, MM, TP
11.B.2e Assess test results and the effectiveness of the design using given criteria and noting possible sources of error.	MD, MT, MM, TP
11.B.2f Report test design, test process and test results.	So, MD, MT, MM, TP
Middle/Junior High School	**STC/MS Unit(s)**
11.B.3a Identify an actual design problem and establish criteria for determining the success of a solution.	CE, EMM, EECD
11.B.3b Sketch, propose and compare design solutions to the problem considering available materials, tools, cost effectiveness and safety.	HBS, CE, EMM, EECD
11.B.3c Select the most appropriate design and build a prototype or simulation.	HBS, CE, EMM, EECD
11.B.3d Test the prototype using available materials, instruments and technology and record the data.	HBS, CE, EMM, EECD
11.B.3e Evaluate the test results based on established criteria, note sources of error and recommend improvements.	HBS, CE, EMM, EECD
11.B.3f Using available technology, report the relative success of the design based on the test results and criteria.	HBS, CE, EMM, EECD
State Goal 12: Understand the fundamental concepts, principles and interconnections of the life, physical and earth/space sciences.	
As a result of their schooling students will be able to:	
Learning Standard A. Know and apply concepts that explain how living things function, adapt and change.	
Early Elementary	**STC Unit(s)**
12.A.1a Identify and describe the component parts of living things (e.g., birds have feathers; people have bones, blood, hair, skin) and their major functions.	O, LCB, PGD

12.A.1b Categorize living organisms using a variety of observable features (e.g., size, color, shape, backbone).	O, LCB, PGD
Late Elementary	**STC Unit(s)**
12.A.2a Describe simple life cycles of plants and animals and the similarities and differences in their offspring.	PGD, AS, AS DD, Mw, Mw DD, E, E DD, EP, EP DD
12.A.2b Categorize features as either inherited or learned (e.g., flower color or eye color is inherited; language is learned).	PGD, AS, AS DD, EP, EP DD
Middle/Junior High School	**STC/MS Unit(s)**
12.A.3a Explain how cells function as "building blocks" of organisms and describe the requirements for cells to live.	HBS, OMM
12.A.3b Compare characteristics of organisms produced from a single parent with those of organisms produced by two parents.	OMM
12.A.3c Compare and contrast how different forms and structures reflect different functions (e.g., similarities and differences among animals that fly, walk or swim; structures of plant cells and animal cells).	OMM
Learning Standard B. Know and apply concepts that describe how living things interact with each other and with their environment.	
Early Elementary	**STC Unit(s)**
12.B.1a Describe and compare characteristics of living things in relationship to their environments.	O, LCB, PGD
12.B.1b Describe how living things depend on one another for survival.	O, LCB, S, PGD
Late Elementary	**STC Unit(s)**
12.B.2a Describe relationships among various organisms in their environments (e.g., predator/prey, parasite/host, food chains and food webs).	PGD, AS, Mw, E, E DD, EP, EP DD
12.b.2b Identify physical features of plants and animals that help them live in different environments (e.g., specialized teeth for eating certain foods, thorns for protection, insulation for cold temperature).	PGD, AS, AS DD, Mw, Mw DD, E, E DD, EP
Middle/Junior High School	**STC/MS Unit(s)**
12.B.3a Identify and classify biotic and abiotic factors in an environment that affect population density, habitat and placement of organisms in an energy pyramid.	OMM
12.B.3b Compare and assess features of organisms for their adaptive, competitive and survival potential (e.g., appendages, reproductive rates, camouflage, defensive structures).	OMM
Learning Standard C. Know and apply concepts that describe properties of matter and energy and the interactions between them.	
Early Elementary	**STC Unit(s)**
12.C.1a Identify and compare sources of energy (e.g., batteries, the sun).	C, CT, So

12.C.1b Compare the large-scale physical properties of matter (e.g., size, shape, color, texture, odor).	SL, CM, S, C, BW, RM, CT
Late Elementary	**STC Unit(s)**
12.C.2a Describe and compare types of energy including light, heat, sound, electrical and mechanical.	CT, So, EC, EC DD, MD, E, FC, FC DD, MM, MM DD
12.c.2b Describe and explain the properties of solids, liquids, and gases.	C
Middle/Junior High School	**STC/MS Unit(s)**
12.C.3a Explain interactions of energy with matter including changes of state and conservation of mass and energy.	CE, EMM, POM
12.C.3b Model and describe the chemical and physical characteristics of matter (e.g., atoms, molecules, elements, compounds, mixtures).	CE, POM
Learning Standard D. Know and apply concepts that describe force and motion and the principles that explain them.	
Early Elementary	**STC Unit(s)**
12.D.1a Identify examples of motion (e.g., moving in a straight line, vibrating, rotating).	SL, BW, So
12.D.1b Identify observable forces in nature (e.g., pushes, pulls, gravity, magnetism).	SL, BW, So
Late Elementary	**STC Unit(s)**
12.D.2a Explain constant, variable, and periodic motions.	So, MD, MT
12.D.2b Demonstrate and explain ways that forces cause actions and reactions (e.g., magnets attracting and repelling, objects falling, rolling and bouncing).	So, LW, MD, MD DD, FS, MT, MT DD, MM, MM DD
Middle/Junior High School	**STC/MS Unit(s)**
12.D.3a Explain and demonstrate how forces affect motion (e.g., action/reaction, equilibrium conditions, free-falling objects).	CE, EMM
12.D.3b Explain the factors that affect the gravitational forces on objects (e.g., changes in mass, distance).	EMM, ES
Learning Standard E. Know and apply concepts that describe the features and processes of the Earth and its resources.	
Early Elementary	**STC Unit(s)**
12.E.1a Identify components and describe diverse features of the Earth's land, water and atmospheric systems.	W, S, C, RM
12.E.1b Identify and describe patterns of weather and seasonal change.	W (seasonal change not included)
12.E.1c Identify renewable and nonrenewable natural resources.	S, RM
Late Elementary	**STC Unit(s)**
12.E.2a Identify and explain natural cycles of the Earth's land, water and atmospheric systems (e.g., rock cycle, water cycle, weather patterns).	RM, LW, LW DD

12.E.2b Describe and explain short-term and long-term interactions of the Earth's components (e.g., earthquakes, types of erosion).	RM, LW, LW DD
12.E.2c Identify and classify recyclable materials.	TP
Middle/Junior High School	**STC/MS Unit(s)**
12.E.3a Analyze and explain large-scale dynamic forces, events and processes that affect the Earth's land, water and atmospheric systems (e.g., jetstream, hurricanes, plate tectonics).	CE, ES
12.E.3b Describe interactions between solid earth, oceans, atmosphere and organisms that have resulted in ongoing changes of Earth (e.g., erosion, El Nino).	CE, ES
12.E.3c Evaluate the biodegradability of renewable and nonrenewable natural resources.	
Learning Standard F. Know and apply concepts that explain the composition and structure of the universe and Earth's place in it.	
Early Elementary	**STC Unit(s)**
12.F.1a Identify and describe characteristics of the sun, Earth and moon as familiar objects in the solar system.	
12.F.1b Identify daily, seasonal and annual patterns related to the Earth's rotation and revolution.	
Late Elementary	**STC Unit(s)**
12.F.2a Identify and explain natural cycles and patterns in the solar system (e.g., order of the planets, moon phases, seasons as related to Earth's tilt, one's latitude, and where Earth is in its yearly orbit around the sun).	MT, MT DD
12.F.2b Explain the apparent motion of the sun and stars.	MT, MT DD
12.F.2c Identify easily recognizable star patterns (e.g., the Big Dipper, constellations).	
Middle/Junior High School	**STC/MS Unit(s)**
12.F.3a Simulate, analyze and explain the effects of gravitational force in the solar system (e.g., orbital shape and speed, tides, spherical shape of the planets and moons).	ES
12.F.3b Describe the organization and physical characteristics of the solar system (e.g., sun, planets, satellites, asteroids, comets).	ES
State Goal 13: Understand the relationships among science, technology and society in historical and contemporary contexts.	
As a result of their schooling students will be able to:	
Learning Standard A. Know and apply the accepted practices of science.	
Early Elementary	**STC Unit(s)**
13.A.1a Use basic safety practices (e.g., not tasting materials without permission, "stop/drop/roll").	All STC units
13.A.1b Explain why similar results are expected when procedures are done the same way.	All STC units

13.A.1c Explain how knowledge can be gained by careful observation.	All STC units
Late Elementary	**STC Unit(s)**
13.A.2a Demonstrate ways to avoid injury when conducting science activities (e.g., wearing goggles, fire extinguisher use).	All STC units
13.A.2b Explain why similar investigations may not produce similar results.	RM, So, MD, FC, FS, MT, MM, TP
13.A.2c Explain why keeping accurate and detailed records is important.	All STC units
Middle/Junior High School	**STC/MS Unit(s)**
13.A.3a Identify and reduce potential hazards in science activities (e.g., ventilation, handling chemicals).	All STC/MS units
13.A.3b Analyze historical and contemporary cases in which the work of science has been affected by both valid and biased scientific practices.	HBS, CE, EMM, ES
13.A.3c Explain what is similar and different about observational and experimental investigations.	HBS, POM, ES
Learning Standards B. Know and apply concepts that describe the interaction between science, technology and society.	
Early Elementary	**STC Unit(s)**
13.B.1a Explain the uses of common scientific instruments (e.g., ruler, thermometer, balance, probe, computer).	All STC units
13.B.1b Explain how using measuring tools improves the accuracy of estimates.	W, CM, BW, PGD, So
13.B.1c Describe contributions men and women have made to science and technology.	W, LCB, PGD, RM
13.B.1d Identify and describe ways that science and technology affect people's everyday lives (e.g., transportation, medicine, agriculture, sanitation, communication occupations).	All STC units
13.B.1d Demonstrate ways to reduce, reuse and recycle materials.	S
Late Elementary	**STC Unit(s)**
13.B.2a Explain how technology is used in science for a variety of purposes (e.g., sample collection, storage and treatment, measurement, data collection, storage and retrieval, communication of information).	PGD, So, LW, LW DD, MD, MD DD, Mw, Mw DD, FS, FS DD, EP, EP DD, MT, MT DD, MM, MM DD, TP, TP DD
13.B.2b Describe the effects on society of scientific and technological innovations (e.g., antibiotics, steam engine, digital computer).	LW, LW DD, EC, EC DD, MD, MD DD, Mw, Mw DD, E, E DD, FC DD, FS, FS DD, EP DD, MT, MT DD, MM, MM DD, TP, TP DD
13.b.2c Identify and explain ways that science and technology influence the lives and careers of people.	PGD, RM, So, AS, LW, MD, Mw, E, FS, EP, MT, MM, TP, all Discovery Decks
13.B.2d Compare the relative effectiveness of reducing, reusing and recycling in actual situations.	TP

13.B.2e Identify and explain ways that technology changes ecosystems (e.g., dams, highways, buildings, communication networks, power plants).	AS DD, LW, E, E DD
13.B.2f Analyze how specific personal and societal choices that humans make affect local, regional and global ecosystems (e.g., lawn and garden care, mass transit).	LW, LW DD, E, E DD, FS DD, TP
Middle/Junior High School	**STC/MS Unit(s)**
13.B.3a Identify and explain ways that scientific knowledge and economics drive technological development.	POM, EECD
13.B.3b Identify important contributions to science and technology that have been made by individuals and groups from various cultures.	All STC/MS units
13.B.3c Describe how occupations use scientific and technological knowledge and skills.	All STC/MS units
13.B.3d Analyze the interaction of resource acquisition, technological development and ecosystem impact (e.g., diamond, coal or gold mining; deforestation).	CE, EMM, POM, EECD
13.B.3e Identify advantages and disadvantages of natural resource conservation and management programs.	
13.B.3f Apply classroom-developed criteria to determine the effects of policies on local science and technology issues (e.g., energy consumption, landfills, water quality).	