Lab-Aids Correlations for

INDIANA'S ACADEMIC STANDARDS FOR SCIENCE - 2016

MIDDLE SCHOOL – GRADES 6-8

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This document is intended to show how the Issues and Science, 3rd Edition (3eR) program materials align with *Indiana's Academic Standards for Science - 2016.*[1]

ABOUT OUR PROGRAMS

Lab-Aids has based its home offices and operations in Ronkonkoma, NY, since 1963. We publish over 200 kits and core curriculum programs to support science teaching and learning, for grades 6-12. All core curricula support a direct-experience pedagogy, with support for literacy skill development and feature assessment approaches and strategies that clearly show what students know and are able to do as a result of program use. All programs have extensive support for technology and feature comprehensive teacher support. For more information, please visit https://www.lab-aids.com/indiana and navigate to the program of interest.

ABOUT OUR MIDDLE SCHOOL CURRICULA -- DEVELOPED BY SEPUP

Instructional materials from the Science Education for Public Understanding Program (SEPUP) are developed at the Lawrence Hall of Science, at the University of California, Berkeley, and distributed nationally by Lab-Aids, Inc. Since 1987, development of SEPUP materials has been supported by grants from the National Science Foundation and other public and private sources. SEPUP programs include student books, equipment kits, teacher materials, and online digital content, and are available as units, each taking 3-8 weeks to complete. A suggested unit sequence for Indiana is shown below.

Grade 6	Grade 7	Grade 8
Ecology	Body Systems	Land, Water, and Human Interactions
Solar System and Beyond	From Cells to Organisms	Weather and Climate
Force and Motion	Earth's Resources	Reproduction
Waves	Geological Processes	Evolution
Biomedical Engineering	Energy	Chemistry of Materials
	Fields and Interactions	Chemical Reactions

[1] https://www.doe.in.gov/standards/science-computer-science

ABOUT THE LAB-AIDS CITATIONS

Citations included in the correlation document are as follows:

SEPS	Science and Engineering Process Standards
LST	Literacy in Science/Technical Subjects
PS	Physical Sciences
ESS	Earth and Space Sciences
LS	Life Sciences
Unit title	*The Chemistry of Materials*
Activity Number	2, 12, 14

NOTE: This document does not represent an exhaustive list. Instead, it is designed to give the reader specific, examples of where to find representative examples of the Indiana standards in the *Issues and Science* (IAS) program materials. For example, the science and engineering process standards can be found throughout the 17 units that comprise the complete middle level program; similarly, support for the literacy-oriented standards can also be found throughout the program. This document was prepared so the reviewer can easily find sufficient examples to justify a decision on whether the Indiana standard(s) is met. For a more detailed review, see our Learning Pathways, at https://sepuplhs.org/pathways.html.

GRADE 6

Indiana Science Standard		Learning Outcome	Where found in SEPUP (Unit and Activity Number)
SEP: Science and Engineering Process Standards	SEPS.1 Posing questions (for science) and defining problems (for engineering)	A practice of science is posing and refining questions that lead to descriptions and explanations of how the natural and designed world(s) work and these questions can be scientifically tested. Engineering questions clarify problems to determine criteria for possible solutions and identify constraints to solve problems about the designed world.	Force and Motion: 1, 10, 14, 15 Waves: 6 Ecology: 4, 14 Biomedical Engineering: 1 – 6, 9
	SEPS.2 Developing and using models and tools	A practice of both science and engineering is to use and construct conceptual models that illustrate ideas and explanations. Models are used to develop questions, predictions and explanations; analyze and identify flaws in systems; build and revise scientific explanations and proposed engineered systems; and communicate ideas. Measurements and observations are used to revise and improve models and designs. Models include, but are not limited to: diagrams, drawings, physical replicas, mathematical representations, analogies, and other technological models. Another practice of both science and engineering is to identify and correctly use tools to construct, obtain, and evaluate questions and problems. Utilize appropriate tools while identifying their limitations. Tools include, but are not limited to: pencil and paper, models, ruler, a protractor, a calculator, laboratory equipment, safety gear, a spreadsheet, experiment data collection software, and other technological tools.	Force and Motion: 10, 11 Waves: 2, 5, 7, 8, 9, 13, 14 Solar System and Beyond: 3, 4, 5, 7, 8, 9, 11, 12, 15, 16 Ecology: 7, 8, 11, 12 Biomedical Engineering: 4, 5, 9
	SEPS.3 Constructing and performing investigations	Scientists and engineers are constructing and performing investigations in the field or laboratory, working collaboratively as well as individually. Researching analogous problems in order to gain insight into possible solutions allows them to make conjectures about the form and meaning of the solution. A plan to a solution pathway is developed prior to constructing and performing investigations. Constructing investigations systematically encompasses identified variables and parameters generating quality	Force and Motion: 3, 4, 6, 7, 13 Waves: 7, 8, 9, 10, 11, 13, 14 Ecology: 4, 5, 7, 9, 11

Indiana Science Standard		Learning Outcome	Where found in SEPUP (Unit and Activity Number)
		data. While performing, scientists and engineers monitor and record progress. After performing, they evaluate to make changes to modify and repeat the investigation if necessary.	
	SEPS.4 Analyzing and interpreting data	Investigations produce data that must be analyzed in order to derive meaning. Because data patterns and trends are not always obvious, scientists and engineers use a range of tools to identify the significant features in the data. They identify sources of error in the investigations and calculate the degree of certainty in the results. Advances in science and engineering make analysis of proposed solutions more efficient and effective. They analyze their results by continually asking themselves questions; possible questions may be, but are not limited to: "Does this make sense?" "Could my results be duplicated?" and/or "Does the design solve the problem with the given constraints?"	Force and Motion: 2 – 8, 14 Waves: 1, 3, 4, 5, 8, 9, 11, 13, 14 Solar System and Beyond: 1, 2, 4 – 7, 9 – 14, 17 Ecology: 3, 4, 6, 7, 9, 14 Biomedical Engineering: 4, 5
	SEPS.5 Using mathematics and computational thinking	In both science and engineering, mathematics and computation are fundamental tools for representing physical variables and their relationships. They are used for a range of tasks such as constructing simulations; solving equations exactly or approximately; and recognizing, expressing, and applying quantitative relationships. Mathematical and computational approaches enable scientists and engineers to predict the behavior of systems and test the validity of such predictions. Scientists and engineers understand how mathematical ideas interconnect and build on one another to produce a coherent whole.	Force and Motion: 2, 5, 8 Waves: 1, 3, 4, 7, 8 Solar System and Beyond: 10 Ecology: 14, 15 Biomedical Engineering: 1, 4, 7, 9
	SEPS.6 Constructing explanations (for science) and designing solutions (for engineering)	Scientists and engineers use their results from the investigation in constructing descriptions and explanations, citing the interpretation of data, connecting the investigation to how the natural and designed world(s) work. They construct or design logical coherent explanations or solutions of phenomena that incorporate their understanding of science and/or engineering or a model that represents it, and are consistent with the available evidence.	Force and Motion: 3, 4, 5, 8, 9 Solar System and Beyond: 3, 7, 8 Ecology: 2, 7, 8, 10, 11, 13 Biomedical Engineering: 4, 5, 7 – 9
	SEPS.7 Engaging in	Scientists and engineers use reasoning and argument based on evidence to identify the best explanation for a natural phenomenon	Force and Motion: 6, 13 Ecology: 1, 5, 6, 14, 15

Indiana Science Standard		Learning Outcome	Where found in SEPUP (Unit and Activity Number)
	argument from evidence	or the best solution to a design problem. Scientists and engineers use argumentation, the process by which evidence-based conclusions and solutions are reached, to listen to, compare, and evaluate competing ideas and methods based on merits. Scientists and engineers engage in argumentation when investigating a phenomenon, testing a design solution, resolving questions about measurements, building data models, and using evidence to evaluate claims.	Biomedical Engineering: 5, 7
	SEPS.8 Obtaining, evaluating, and communicating information	Scientists and engineers need to be communicating clearly and articulating the ideas and methods they generate. Critiquing and communicating ideas individually and in groups is a critical professional activity. Communicating information and ideas can be done in multiple ways: using tables, diagrams, graphs, models, and equations, as well as, orally, in writing, and through extended discussions. Scientists and engineers employ multiple sources to obtain information that is used to evaluate the merit and validity of claims, methods, and designs.	Force and Motion: 1, 9, 15 Waves: 3, 4, 5, 6, 9, 12, 15 Ecology: 2, 16

Indiana Science Standard		Learning Outcome	Where found in SEPUP (Unit and Activity Number)
LST.1: LEARNING OUTCOME FOR LITERACY IN SCIENCE/ TECHNICAL SUBJECTS	6-8.LST.1.1	Read and comprehend science and technical texts within a range of complexity appropriate for grades 6-8 independently and proficiently by the end of grade 8.	Throughout, see for example Appendices E, F, in all unit student books and all READING type activities
	6-8.LST.1.2	Write routinely over a variety of time frames for a range of discipline-specific tasks, purposes, and audiences.	Throughout, see for example Appendices E, F, in all unit student books and teacher support for student literacy (TR 45-55)
LST.2: KEY IDEAS AND TEXTUAL SUPPORT	6-8.LST.2.1	Cite specific textual evidence to support analysis of science and technical texts.	Force and Motion: 9, 11 Waves: 3, 6, 12, 15 Solar System and Beyond: 1, 15

Indiana Science Standard		Learning Outcome	Where found in SEPUP (Unit and Activity Number)
(READING)			Ecology: 1, 2 Biomedical Engineering: 3, 6
	6-8.LST.2.2	Determine the central ideas or conclusions of a text; provide an accurate, objective summary of the text.	Force and Motion: 9 Solar System and Beyond: 9 Biomedical Engineering: 3, 6
	6-8.LST.2.3	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.	Force and Motion: 3, 6, 7, 10, 12-14 Waves: 3, 6, 12, 15 Ecology: 3, 4, 6, 7, 11
LST.3: STRUCTURAL ELEMENTS AND ORGANIZATION (READING)	6-8.LST.3.1	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.	Throughout, see for example the SEPUP approach to vocabulary and meaning making strategies such as concept maps and BUILD UNDERSTANDING in the TE lesson plans for each unit activity
	6-8.LST.3.2	Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.	Solar System and Beyond: 17 Ecology: 1, 5 Biomedical Engineering: 6
	6-8.LST.3.3	Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.	Waves: 3 Solar System and Beyond: 9, 15 Ecology: 1, 8 Biomedical Engineering: 3
LST.4: SYNTHESIS AND CONNECTION OF IDEAS (READING)	6-8.LST.4.1	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., *in a flowchart, diagram, model, graph, or table*).	Force and Motion: 1, 2, 5, 7, 8, 15
	6-8.LST.4.2	Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.	Ecology: 2, 15, 16
	6-8.LST.4.3	Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.	Waves: 3, 6, 12 Biomedical Engineering: 3, 6

Indiana Science Standard		Learning Outcome	Where found in SEPUP (Unit and Activity Number)
LST.5: WRITING GENRES (WRITING)	6-8.LST.5.1	Write arguments focused on discipline-specific content.	Ecology: 1, 5, 9, 10, 12 – 15
	6-8.LST.5.2	Write informative texts, including scientific procedures/experiments or technical processes that include precise descriptions and conclusions drawn from data and research.	Force and Motion: 4, 5 Solar System and Beyond: 3, 5, 9, 12, 15, 17 Ecology: 16
LST.6: THE WRITING PROCESS (WRITING)	6-8.LST.6.1	Plan and develop; draft; revise using appropriate reference materials; rewrite; try a new approach; and edit to produce and strengthen writing that is clear and coherent, with some guidance and support from peers and adults.	Addressed through use of science notebook throughout all units, also use of *Writing Frames* and *Writing Reviews*, see *TR Literacy Section*
	6-8.LST.6.2	Use technology to produce and publish writing and present the relationships between information and ideas clearly and efficiently.	Addressed through use of science notebook throughout all units, also use of *Writing Frames* and *Writing Reviews*, see *TR Literacy Section*
LST.7: THE RESEARCH PROCESS (WRITING)	6-8.LST.7.1	Conduct short research assignments and tasks to answer a question (including a self- generated question), or test a hypothesis, drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.	See TR Literacy support (TR 45-71) and Research Project Activities; see also Formal Investigation Report and Research Projects, TR pp. 52-53
	6-8.LST.7.2	Gather relevant information from multiple sources, using search terms effectively; annotate sources; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation (e.g., *APA or CSE*).	See TR Literacy support (TR 45-71) and Research Project Activities; see also Formal Investigation Report and Research Projects, TR pp. 52-53
	6-8.LST.7.3	Draw evidence from informational texts to support analysis, reflection, and research.	Waves: 5, 6, 15 Solar System and Beyond: 1, 17 Ecology: 1, 2, 8 Biomedical Engineering: 6
Physical Sciences (PS)	6.PS.1	Distinguish between the terms position, distance, and displacement, as well as, the terms speed and velocity.	Force and Motion: 2, 8

Indiana Science Standard		Learning Outcome	Where found in SEPUP (Unit and Activity Number)
	6.PS.2	Describe the motion of an object graphically showing the relationship between time and position.	Force and Motion: 2, 8
	6.PS.3	Describe how potential and kinetic energy can be transferred from one form to another.	Energy: 2, 3, 4, 5, 6 Force and Motion: 3, 4, 12
	6.PS.4	Investigate the properties of light, sound, and other energy waves and how they are reflected, absorbed, and transmitted through materials and space.	Waves: 2, 3, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14
Earth and Space Sciences (ESS)	6.ESS.1	Describe the role of gravity and inertia in maintaining the regular and predictable motion of celestial bodies.	Solar System and Beyond: 14 – 16
	6.ESS.2	Design models to describe how Earth's rotation, revolution, tilt, and interaction with the sun and moon cause seasons, tides, changes in daylight hours, eclipses, and phases of the moon.	Solar System and Beyond: 2, 3, 4, 5, 6, 7, 8, 9
	6.ESS.3	Compare and contrast the Earth, its moon, and other planets in the solar system, including comets and asteroids. (Comparisons should be made in regard to size, surface features, atmospheric characteristics, and the ability to support life.)	Solar System and Beyond: 10-12, 13
Life Sciences (LS)	6.LS.1	Investigate and describe how homeostasis is maintained as living things seek out their basic needs of food, water, shelter, space, and air.	(From Cells to Organisms: 7)
	6.LS.2	Describe the role of photosynthesis in the flow of energy in food chains, energy pyramids, and food webs. Create diagrams to show how the energy in animals' food used for bodily processes was once energy from the sun.	From Cells to Organisms: 12, 13
	6.LS.3	Describe specific relationships (predator/prey, consumer/producer, parasite/host) and symbiotic relationships between organisms. Construct an explanation that predicts why patterns of interactions develop between organisms in an ecosystem.	Ecology: 7, 8, 9, 10
	6.LS.4	Investigate and use data to explain how changes in biotic and abiotic components in a given habitat can be beneficial or detrimental to native plants and animals.	Ecology: 1 – 6, 8, 10, 12, 13, 14

Indiana Science Standard		Learning Outcome	Where found in SEPUP (Unit and Activity Number)
	6.LS.5	Research invasive species and discuss their impact on ecosystems.	Ecology: 1, 2, 12, 14, 15, 16
Engineering €	6-8.E.1	Identify the criteria and constraints of a design to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.	Force and Motion: 1, 10, 11, 13-15 Biomedical Engineering: 1, 2, 3
	6-8.E.2	Evaluate competing design solutions using a systematic process to identify how well they meet the criteria and constraints of the problem.	Biomedical Engineering: 4, 5, 7
	6-8.E.3	Analyze data from investigations to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.	Biomedical Engineering: 1, 2, 4, 5
	6-8.E.4	Develop a prototype to generate data for repeated investigations and modify a proposed object, tool, or process such that an optimal design can be achieved.	Biomedical Engineering: 2, 4, 5, 8, 9

GRADE 7

Indiana Science Standard		Learning Outcome	Where found in SEPUP (Unit and Activity Number)
SEP: Science and Engineering Process Standards	SEPS.1 Posing questions (for science) and defining problems (for engineering)	A practice of science is posing and refining questions that lead to descriptions and explanations of how the natural and designed world(s) work and these questions can be scientifically tested. Engineering questions clarify problems to determine criteria for possible solutions and identify constraints to solve problems about the designed world.	Energy: 1 Fields and Interactions: 1, 3, 6 - 10, 12, 13 Geological Processes: 1, 6, 9 Body Systems: 2
	SEPS.2 Developing and using models and tools	A practice of both science and engineering is to use and construct conceptual models that illustrate ideas and explanations. Models are used to develop questions, predictions and explanations; analyze and identify flaws in systems; build and revise scientific explanations and proposed engineered systems; and communicate ideas. Measurements and observations are used to revise and improve models and designs. Models include, but are not limited to: diagrams, drawings, physical replicas, mathematical representations, analogies, and other technological models. Another practice of both science and engineering is to identify and correctly use tools to construct, obtain, and evaluate questions and problems. Utilize appropriate tools while identifying their limitations. Tools include, but are not limited to: pencil and paper, models, ruler, a protractor, a calculator, laboratory equipment, safety gear, a spreadsheet, experiment data collection software, and other technological tools.	Energy: 3, 13 Fields and Interactions: 3, 6, 7, 11 – 13, 15 Earth's Resources: 5, 6, 8, 9 Geological Processes: 2, 3, 5, 8 - 10, 14 – 18 From Cells to Organisms: 5 – 8, 11 Body Systems: 2, 5, 12
	SEPS.3 Constructing and performing investigations	Scientists and engineers are constructing and performing investigations in the field or laboratory, working collaboratively as well as individually. Researching analogous problems in order to gain insight into possible solutions allows them to make conjectures about the form and meaning of the solution. A plan to a solution pathway is developed prior to constructing and performing investigations. Constructing investigations systematically encompasses identified variables and parameters generating quality	Energy: 2, 4, 7, 8, 14 Fields and Interactions: 5, 9, 12 Earth's Resources: 10 Geological Processes: 2, 5, 9, 10, 14, 17 From Cells to Organisms: 3, 5, 7, 9, 13 Body Systems: 6, 7, 10

Indiana Science Standard		Learning Outcome	Where found in SEPUP (Unit and Activity Number)
		data. While performing, scientists and engineers monitor and record progress. After performing, they evaluate to make changes to modify and repeat the investigation if necessary.	
	SEPS.4 Analyzing and interpreting data	Investigations produce data that must be analyzed in order to derive meaning. Because data patterns and trends are not always obvious, scientists and engineers use a range of tools to identify the significant features in the data. They identify sources of error in the investigations and calculate the degree of certainty in the results. Advances in science and engineering makes analysis of proposed solutions more efficient and effective. They analyze their results by continually asking themselves questions; possible questions may be, but are not limited to: “Does this make sense?” "Could my results be duplicated?" and/or “Does the design solve the problem with the given constraints?”	Energy: 1, 2, 4, 7, 8, 11, 14 Fields and Interactions: 1-6, 9, 13, 15 Earth’s Resources: 5, 8 Geological Processes: 2, 5, 6, 8 – 18 From Cells to Organisms: 1, 3, 5, 7, 9, 13, 15 Body Systems: 6, 7, 9, 10, 13, 14
	SEPS.5 Using mathematics and computational thinking	In both science and engineering, mathematics and computation are fundamental tools for representing physical variables and their relationships. They are used for a range of tasks such as constructing simulations; solving equations exactly or approximately; and recognizing, expressing, and applying quantitative relationships. Mathematical and computational approaches enable scientists and engineers to predict the behavior of systems and test the validity of such predictions. Scientists and engineers understand how mathematical ideas interconnect and build on one another to produce a coherent whole.	Energy: 2, 3, 4, 7, 8, 11, 14, 15 Fields and Interactions: 1, 2, 3, 4, 7, 9, 11-15 Earth’s Resources: 2, 4 Geological Processes: 1, 6-8, 12, 14 From Cells to Organisms: 1 Body Systems: 9
	SEPS.6 Constructing explanations (for science) and designing solutions (for engineering)	Scientists and engineers use their results from the investigation in constructing descriptions and explanations, citing the interpretation of data, connecting the investigation to how the natural and designed world(s) work. They construct or design logical coherent explanations or solutions of phenomena that incorporate their understanding of science and/or engineering or a model that represents it, and are consistent with the available evidence.	Energy: 3, 7, 10 – 13 Fields and Interactions: 4, 6, 10, 13 Earth’s Resources: 1-3, 7, 9-11, 14 Geological Processes: 3-5, 7, 10, 12-18 From Cells to Organisms: 4, 5, 9-13, 15 Body Systems: 3, 4, 5

Indiana Science Standard		Learning Outcome	Where found in SEPUP (Unit and Activity Number)
	SEPS.7 Engaging in argument from evidence	Scientists and engineers use reasoning and argument based on evidence to identify the best explanation for a natural phenomenon or the best solution to a design problem. Scientists and engineers use argumentation, the process by which evidence-based conclusions and solutions are reached, to listen to, compare, and evaluate competing ideas and methods based on merits. Scientists and engineers engage in argumentation when investigating a phenomenon, testing a design solution, resolving questions about measurements, building data models, and using evidence to evaluate claims.	Energy: 5, 6, 13 Fields and Interactions: 3, 4, 7, 6, 13, 15 Earth's Resources: 2, 4, 6, 13 Geological Processes: 4, 11, 12, 18 From Cells to Organisms: 2, 10 Body Systems: 1, 4, 12 , 13, 14
	SEPS.8 Obtaining, evaluating, and communicating information	Scientists and engineers need to be communicating clearly and articulating the ideas and methods they generate. Critiquing and communicating ideas individually and in groups is a critical professional activity. Communicating information and ideas can be done in multiple ways: using tables, diagrams, graphs, models, and equations, as well as, orally, in writing, and through extended discussions. Scientists and engineers employ multiple sources to obtain information that is used to evaluate the merit and validity of claims, methods, and designs.	Energy: 5, 9, 15 Earth's Resources: 2 Geological Processes: 1, 4, 13, 16 From Cells to Organisms: 4, 6, 8, 10, 14 Body Systems: 1, 7, 8

Indiana Science Standard		Learning Outcome	Where found in SEPUP (Unit and Activity Number)
LST.1: LEARNING OUTCOME FOR LITERACY IN SCIENCE/TECHNICAL SUBJECTS Read and comprehend science and technical texts independently	6-8.LST.1.1	Read and comprehend science and technical texts within a range of complexity appropriate for grades 6-8 independently and proficiently by the end of grade 8.	Throughout, see for example Appendices E, F, in all unit student books and all READING type activities
	6-8.LST.1.2	Write routinely over a variety of time frames for a range of discipline-specific tasks, purposes, and audiences.	Throughout, see for example Appendices E, F, in all unit student books and teacher support for student literacy (TR 45-55)

Indiana Science Standard		Learning Outcome	Where found in SEPUP (Unit and Activity Number)
and proficiently and write effectively for a variety of discipline-specific tasks, purposes, and audiences			
LST.2: KEY IDEAS AND TEXTUAL SUPPORT (READING) Extract and construct meaning from science and technical texts using a variety of comprehension skills	6-8.LST.2.1	Cite specific textual evidence to support analysis of science and technical texts.	Energy: 9 Fields and Interactions: 2, 3, 14, 15 Earth's Resources: 2, 4, 7, 13, 14 Geological Processes: 1, 4
	6-8.LST.2.2	Determine the central ideas or conclusions of a text; provide an accurate, objective summary of the text.	Geological Processes: 4, 11, 13, 14, 16 From Cells to Organisms: 11, 15 Body Systems: 5, 11
	6-8.LST.2.3	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.	Energy: 2, 4, 7, 10, 11, 14 Fields and Interactions: 5, 9, 10, 12 Earth's Resources: 1, 3, 5, 6, 8 – 11 Geological Processes: 2, 5, 8, 9 From Cells to Organisms: 1, 3, 5, 7, 9, 12, 13 Body Systems: 9, 10, 13
LST.3: STRUCTURAL ELEMENTS AND ORGANIZATION (READING) Build understanding of science and technical texts, using knowledge of structural organization and author's purpose and	6-8.LST.3.1	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.	Throughout, see for example the SEPUP approach to vocabulary and meaning making strategies such as concept maps and BUILD UNDERSTANDING in the TE lesson plans for each unit activity
	6-8.LST.3.2	Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.	Fields and Interactions: 6, 13, 15 Earth's Resources: 2 - 4, 6, 13 Geological Processes: 13, 16 From Cells to Organisms: 2, 4, 9, 10 Body Systems: 1, 4, 12

Indiana Science Standard		Learning Outcome	Where found in SEPUP (Unit and Activity Number)
message	6-8.LST.3.3	Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.	Energy: 5, 9 Fields and Interactions: 2, 7, 14 Earth's Resources: 2, 7 Geological Processes: 4, 11, 16 From Cells to Organisms: 4, 6, 10, 11, 15 Body Systems: 1, 3, 4, 8, 11
LST.4: SYNTHESIS AND CONNECTION OF IDEAS (READING) Build understanding of science and technical texts by synthesizing and connecting ideas and evaluating specific claims	6-8.LST.4.1	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., *in a flowchart, diagram, model, graph, or table*).	Fields and Interactions: 6 Geological Processes: 16, 17 From Cells to Organisms: 6, 8, 14 Body Systems: 1, 2
	6-8.LST.4.2	Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.	See for example, Media Literacy, Appendix F, in all unit student books
	6-8.LST.4.3	Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.	From Cells to Organisms: 2, 4, 6, 10, 11, 14 Body Systems: 1, 5
LST.5: WRITING GENRES (WRITING) Write for different purposes and to specific audiences or people	6-8.LST.5.1	Write arguments focused on discipline-specific content.	Energy: 5, 6 Fields and Interactions: 4, 7 Earth's Resources: 2, 4, 6, 7, 9, 11-13 Geological Processes: 11, 12, 16 From Cells to Organisms: 15 Body Systems: 12, 13, 14
	6-8.LST.5.2	Write informative texts, including scientific procedures/experiments or technical processes that include precise descriptions and conclusions drawn from data and research.	Earth's Resources: 14 Geological Processes: 18 From Cells to Organisms: 7, 8 Body Systems: 12
LST.6: THE WRITING PROCESS (WRITING) Produce coherent and	6-8.LST.6.1	Plan and develop; draft; revise using appropriate reference materials; rewrite; try a new approach; and edit to produce and strengthen writing that is clear and coherent, with some guidance and support from peers and adults.	Addressed through use of science notebook throughout all units, see for example Appendix E, Literacy Strategies, in all unit books

Indiana Science Standard		Learning Outcome	Where found in SEPUP (Unit and Activity Number)
legible documents by planning, drafting, revising, editing, and collaborating with others	6-8.LST.6.2	Use technology to produce and publish writing and present the relationships between information and ideas clearly and efficiently.	Addressed through use of science notebook throughout all units; , see for example Appendix E, Literacy Strategies, in all unit books
LST.7: THE RESEARCH PROCESS (WRITING) Build knowledge about the research process and the topic under study by conducting short or more sustained research	6-8.LST.7.1	Conduct short research assignments and tasks to answer a question (including a self- generated question), or test a hypothesis, drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.	See TR Literacy support (TR 45-71) and Research Project Activities; see also Formal Investigation Report and Research Projects, TR pp. 52-53; see for example Fields 9, 10
	6-8.LST.7.2	Gather relevant information from multiple sources, using search terms effectively; annotate sources; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation (e.g., *APA or CSE*).	See TR Literacy support (TR 45-71) and Research Project Activities; see also Formal Investigation Report and Research Projects, TR pp. 52-53; Support for standard format for citation can be found in the Focus Lesson: Guidelines to Internet Research, Fair Use of Online Content, and Formats for Citation
	6-8.LST.7.3	Draw evidence from informational texts to support analysis, reflection, and research.	Energy: 1, 3, 5, 6, 9, 12, 15 Fields and Interactions: 15 Earth's Resources: 2, 4, 7, 11 – 14 Geological Processes: 4 From Cells to Organisms: 4, 6, 10 Body Systems: 14
Physical Sciences (PS)	7.PS.1	Draw, construct models, or use animations to differentiate between atoms, elements, molecules, and compounds.	Chemistry of Materials: 6, 7, 12
	7.PS.2	Describe the properties of solids, liquids, and gases. Develop models that predict and describe changes in particle motion, density, temperature, and state of a pure substance when thermal energy is added or removed.	Chemistry of Materials: 8, 9, 10

Indiana Science Standard		Learning Outcome	Where found in SEPUP (Unit and Activity Number)
	7.PS.3	Investigate the Law of Conservation of Mass by measuring and comparing the mass of a substance before and after a change of state.	Chemical Reactions: 6, 7
	7.PS.4	Investigate Newton's first law of motion (Law of Inertia) and how different forces (gravity, friction, push and pull) affect the velocity of an object.	Force and Motion: 2, 3, 4, 6, 7, 8, 9, 13
	7.PS.5	Investigate Newton's second law of motion to show the relationship among force, mass and acceleration.	Force and Motion: 8, 9
	7.PS.6	Investigate Newton's third law of motion to show the relationship between action and reaction forces.	Force and Motion: 10, 11, 12
	7.PS.7	Construct a device that uses one or more of Newton's laws of motion. Explain how motion, acceleration, force, and mass are affecting the device.	Force and Motion: 15 (designed but not constructed)
	7.PS.8	Investigate a process in which energy is transferred from one form to another and provide evidence that the total amount of energy does not change during the transfer when the system is closed. (Law of conservation of energy)	Energy: (2, 3, 4,) 5, 7
	7.PS.9	Compare and contrast the three types of heat transfer: radiation, convection, and conduction.	Energy: 12
Earth and Space Sciences (ESS)	7.ESS.1	Identify and investigate the properties of minerals. Identify and classify a variety of rocks based on physical characteristics from their origin, and explain how they are related using the rock cycle. (i.e. Sedimentary, igneous, and metamorphic rocks)	Earth's Resources: 3 Geological Processes: 15
	7.ESS.2	Construct a model or scale drawing (digitally or on paper), based on evidence from rock strata and fossil records, for how the geologic time scale is used to organize Earth's 4.6 billion-year-old history.	Earth's Resources: 9, 10, 11, 12
	7.ESS.3	Using simulations or demonstrations, explain continental drift theory and how lithospheric (tectonic) plates have been and still are in constant motion resulting in the creation of landforms on the Earth's surface over time.	Geological Processes: 6, 7, 8, 10, 11, 12, 13, 14

Indiana Science Standard		Learning Outcome	Where found in SEPUP (Unit and Activity Number)
	7.ESS.4	Construct an explanation, based on evidence found in and around Indiana, for how large-scale physical processes, such as Karst topography and glaciation, have shaped the land.	Local standard; not addressed
	7.ESS.5	Construct a model, diagram, or scale drawing of the interior layers of the Earth. Identify and compare the compositional (chemical) layers to the mechanical (physical) layers of the Earth's interior including magnetic properties.	Geological Processes: 8
	7.ESS.6	Research common synthetic materials (i.e. plastics, composites, polyester, and alloys) to gain an understanding that synthetic materials do come from natural resources and have an impact on society.	Chemistry of Materials: 11, 13 Earth's Resources: 13, 14
	7.ESS.7	Describe the positive and negative environmental impacts of obtaining and utilizing various renewable and nonrenewable energy resources in Indiana. Determine which energy resources are the most beneficial and efficient.	Earth's Resources: 13, 14
Life Sciences (LS)	7.LS.1	Investigate and observe cells in living organisms and collect evidence showing that living things are made of cells. Compare and provide examples of prokaryotic and eukaryotic organisms. Identify the characteristics of living things.	From Cells to Organisms: 3, 4, **5**, 6, 9, 10, 12 (types of cancer identified but not mechanism)
	7.LS.2	Create a model to show how the cells in multicellular organisms repeatedly divide to make more cells for growth and repair as a result of mitosis. Explain how mitosis is related to cancer.	Cells 5 (not addressed using a modeling strategy)
	7.LS.3	Explain how cells develop through differentiation into specialized tissues and organs in multicellular organisms.	(From Cells to Organisms: 10)
	7.LS.4	Research and describe the functions and relationships between various cell types, tissues, and organs in the immune system, circulatory system and digestive system of the human body.	Body Systems: 3, 4, 9, 10, 11, 12
	7.LS.5	Compare and contrast the form and function of the organelles found in plant and animal cells.	From Cells to Organisms: 3, 6, 7, 8, 9, 10
Engineering (E)	6-8.E.1	Identify the criteria and constraints of a design to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may	Fields and Interactions 2, 3, 6

Indiana Science Standard		Learning Outcome	Where found in SEPUP (Unit and Activity Number)
		limit possible solutions.	
	6-8.E.2	Evaluate competing design solutions using a systematic process to identify how well they meet the criteria and constraints of the problem.	Fields and Interactions: 6, 13, 15
	6-8.E.3	Analyze data from investigations to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.	Fields and Interactions: 6, 11, 13, 15
	6-8.E.4	Develop a prototype to generate data for repeated investigations and modify a proposed object, tool, or process such that an optimal design can be achieved.	Fields and Interactions: 1, 2, 3, 6, 11, 13

GRADE 8

Indiana Science Standard		Learning Outcome	Where found in SEPUP (Unit and Activity Number)
SEP: Science and Engineering Process Standards	SEPS.1 Posing questions (for science) and defining problems (for engineering)	A practice of science is posing and refining questions that lead to descriptions and explanations of how the natural and designed world(s) work and these questions can be scientifically tested. Engineering questions clarify problems to determine criteria for possible solutions and identify constraints to solve problems about the designed world.	Chemistry of Materials: 1, 5 Weather and Climate: 1, 3, 16 Land, Water and Human Interactions: 1, 7, 12 Reproduction: 1 Evolution: 6, 14
	SEPS.2 Developing and using models and tools	A practice of both science and engineering is to use and construct conceptual models that illustrate ideas and explanations. Models are used to develop questions, predictions and explanations; analyze and identify flaws in systems; build and revise scientific explanations and proposed engineered systems; and communicate ideas. Measurements and observations are used to revise and improve models and designs. Models include, but are not limited to: diagrams, drawings, physical replicas, mathematical representations, analogies, and other technological models. Another practice of both science and engineering is to identify and correctly use tools to construct, obtain, and evaluate questions and problems. Utilize appropriate tools while identifying their limitations. Tools include, but are not limited to: pencil and paper, models, ruler, a protractor, a calculator, laboratory equipment, safety gear, a spreadsheet, experiment data collection software, and other technological tools.	Chemistry of Materials: 6 – 10, 12 Chemical Reactions: 4, 7, 10 Weather and Climate: 6, 7, 8, 12 – 14 Land, Water and Human Interactions: 5 – 10, 12 Reproduction: 2 – 5, 8, 9, 12, 13 Evolution: 1, 2, 4 – 6
	SEPS.3 Constructing and performing investigations	Scientists and engineers are constructing and performing investigations in the field or laboratory, working collaboratively as well as individually. Researching analogous problems in order to gain insight into possible solutions allows them to make conjectures about the form and meaning of the solution. A plan to a solution pathway is developed prior to constructing and performing investigations. Constructing investigations systematically encompasses identified variables and parameters	Chemistry of Materials: 2 – 4, 9 – 11 Chemical Reactions: 2, 12, 13 Weather and Climate: 2, 3, 5 - 9, 11, 12, 13, 15 Land, Water and Human Interactions: 2, 5, 10 Reproduction: 7

Indiana Science Standard		Learning Outcome	Where found in SEPUP (Unit and Activity Number)
		generating quality data. While performing, scientists and engineers monitor and record progress. After performing, they evaluate to make changes to modify and repeat the investigation if necessary.	
	SEPS.4 Analyzing and interpreting data	Investigations produce data that must be analyzed in order to derive meaning. Because data patterns and trends are not always obvious, scientists and engineers use a range of tools to identify the significant features in the data. They identify sources of error in the investigations and calculate the degree of certainty in the results. Advances in science and engineering makes analysis of proposed solutions more efficient and effective. They analyze their results by continually asking themselves questions; possible questions may be, but are not limited to: “Does this make sense?” "Could my results be duplicated?" and/or “Does the design solve the problem with the given constraints?”	Chemistry of Materials: 1 - 4, 10, 11 Chemical Reactions: 1 - 3, 5 - 7, 9 – 13 Weather and Climate: 2 – 8, 11, 13, 15 – 17 Land, Water and Human Interactions: 3, 4, 10, 11 Reproduction: 4, 6, 7, 10, 13 Evolution: 1, 2, 4, 9 - 14
	SEPS.5 Using mathematics and computational thinking	In both science and engineering, mathematics and computation are fundamental tools for representing physical variables and their relationships. They are used for a range of tasks such as constructing simulations; solving equations exactly or approximately; and recognizing, expressing, and applying quantitative relationships. Mathematical and computational approaches enable scientists and engineers to predict the behavior of systems and test the validity of such predictions. Scientists and engineers understand how mathematical ideas interconnect and build on one another to produce a coherent whole.	Chemistry of Materials: 4 Weather and Climate: 2, 4, 5, 12, 16, 17 Land, Water and Human Interactions: 3, 4, 10, 11 Reproduction: 4 – 7, 9, 10, 14 Evolution: 1, 2, 4 – 6, 11, 12
	SEPS.6 Constructing explanations (for science) and designing solutions (for engineering)	Scientists and engineers use their results from the investigation in constructing descriptions and explanations, citing the interpretation of data, connecting the investigation to how the natural and designed world(s) work. They construct or design logical coherent explanations or solutions of phenomena that incorporate their understanding of science and/or engineering or a model that represents it, and are consistent with the available	Chemistry of Materials: 8, 10, 13 Chemical Reactions: 8, 10, 11 Weather and Climate: 12 Land, Water and Human Interactions: 5, 7- 9, 11 – 16 Reproduction: 2 – 7 Evolution: 2 – 9, 11, 12, 15

Indiana Science Standard		Learning Outcome	Where found in SEPUP (Unit and Activity Number)
		evidence.	
	SEPS.7 Engaging in argument from evidence	Scientists and engineers use reasoning and argument based on evidence to identify the best explanation for a natural phenomenon or the best solution to a design problem. Scientists and engineers use argumentation, the process by which evidence-based conclusions and solutions are reached, to listen to, compare, and evaluate competing ideas and methods based on merits. Scientists and engineers engage in argumentation when investigating a phenomenon, testing a design solution, resolving questions about measurements, building data models, and using evidence to evaluate claims.	Chemistry of Materials: 9 Chemical Reactions: 5, 12, 13 Weather and Climate: 4, 9, 12, 13, 15 – 17 Land, Water and Human Interactions: 4, 6, 12, 16 Reproduction: 2, 4, 10, 11 Evolution: 3, 10, 12, 14
	SEPS.8 Obtaining, evaluating, and communicating information	Scientists and engineers need to be communicating clearly and articulating the ideas and methods they generate. Critiquing and communicating ideas individually and in groups is a critical professional activity. Communicating information and ideas can be done in multiple ways: using tables, diagrams, graphs, models, and equations, as well as, orally, in writing, and through extended discussions. Scientists and engineers employ multiple sources to obtain information that is used to evaluate the merit and validity of claims, methods, and designs.	Chemistry of Materials: 1, 2, 5, 7, 11, 13 Chemical Reactions: 3 Weather and Climate: 14, 17 Land, Water and Human Interactions: 6, 9, 14 Reproduction: 1, 3, 6, 8, 14 Evolution: 8, 15 - 17

Indiana Science Standard		Learning Outcome	SEPUP Unit and Activity Number
LST.1: LEARNING OUTCOME FOR LITERACY IN SCIENCE/TECHNICAL SUBJECTS Read and comprehend science and technical	6-8.LST.1.1	Read and comprehend science and technical texts within a range of complexity appropriate for grades 6-8 independently and proficiently by the end of grade 8.	Throughout, see for example Appendices E, F, in all unit student books and all READING type activities
	6-8.LST.1.2	Write routinely over a variety of time frames for a range of discipline-specific tasks, purposes, and audiences.	Throughout, see for example Appendices E, F, in all unit student books and teacher support for student literacy (TR 45-55), Writing

Indiana Science Standard		Learning Outcome	SEPUP Unit and Activity Number
texts independently and proficiently and write effectively for a variety of discipline-specific tasks, purposes, and audiences			Frames, Writing Reviews, more…
LST.2: KEY IDEAS AND TEXTUAL SUPPORT (READING) Extract and construct meaning from science and technical texts using a variety of comprehension skills	6-8.LST.2.1	Cite specific textual evidence to support analysis of science and technical texts.	Chemical Reactions: 1, 3, 4, 5 Land, Water and Human Interactions: 6, 9, 14 Reproduction: 3, 10, 11 Evolution: 15
	6-8.LST.2.2	Determine the central ideas or conclusions of a text; provide an accurate, objective summary of the text.	Chemistry of Materials: 7 Land, Water and Human Interactions: 15 Reproduction: 1, 5, 8 Evolution: 3
	6-8.LST.2.3	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.	Chemistry of Materials: 2, 3, 10, 11 Chemical Reactions: 2, 4, 6, 8, 9 Weather and Climate: 6 – 8, 11, 12 Land, Water and Human Interactions: 2, 4, 5, 7, 10, 12 Evolution: 1, 2, 4, 9, 10
LST.3: STRUCTURAL ELEMENTS AND ORGANIZATION (READING) Build understanding of science and technical texts, using knowledge of structural organization and	6-8.LST.3.1	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.	Throughout, see for example the SEPUP approach to vocabulary and meaning making strategies such as concept maps and BUILD UNDERSTANDING in the TE lesson plans for each unit activity
	6-8.LST.3.2	Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.	Chemistry of Materials: 5, 7, 13 Chemical Reactions: 5, 11 - 13 Weather and Climate: 6 Reproduction: 10, 11

Indiana Science Standard		Learning Outcome	SEPUP Unit and Activity Number
author's purpose and message	6-8.LST.3.3	Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.	Chemistry of Materials: 1, 13 Chemical Reactions: 1, 3 Weather and Climate: 1, 10, 14 Land, Water and Human Interactions: 1, 3, 9, 13 Reproduction: 3
LST.4: SYNTHESIS AND CONNECTION OF IDEAS (READING) Build understanding of science and technical texts by synthesizing and connecting ideas and evaluating specific claims	6-8.LST.4.1	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., *in a flowchart, diagram, model, graph, or table*).	Chemistry of Materials: 7, 13 Chemical Reactions: 3 Weather and Climate: 4, 14, 17 Reproduction: 2, 3, 5, 6, 8, 12, 13 Evolution: 8, 11 - 14
	6-8.LST.4.2	Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.	See for example, Media Literacy, Appendix F, in all unit student books
	6-8.LST.4.3	Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.	Chemical Reactions: 1 Weather and Climate: 9, 10 Land, Water and Human Interactions: 9, 13 Reproduction: 6 Evolution: 7
LST.5: WRITING GENRES (WRITING) Write for different purposes and to specific audiences or people	6-8.LST.5.1	Write arguments focused on discipline-specific content.	Chemistry of Materials: 1, 13 Chemical Reactions: 12, 13 Weather and Climate: 16, 17 Reproduction: 2, 10, 11
	6-8.LST.5.2	Write informative texts, including scientific procedures/experiments or technical processes that include precise descriptions and conclusions drawn from data and research.	Land, Water and Human Interactions: 8, 15, 16 Reproduction: 3, 8, 14 Evolution: 4, 7, 8, 17
LST.6: THE WRITING PROCESS (WRITING) Produce coherent and legible documents by	6-8.LST.6.1	Plan and develop; draft; revise using appropriate reference materials; rewrite; try a new approach; and edit to produce and strengthen writing that is clear and coherent, with some guidance and support from peers and adults.	Addressed through use of science notebook throughout all units; see also Appendix E, Literacy Strategies, in all unit student books; see also Writing Frames and Writing Review

Indiana Science Standard		Learning Outcome	SEPUP Unit and Activity Number
planning, drafting, revising, editing, and collaborating with others			(TR 53-54)
	6-8.LST.6.2	Use technology to produce and publish writing and present the relationships between information and ideas clearly and efficiently.	Addressed through use of science notebook throughout all units
LST.7: THE RESEARCH PROCESS (WRITING) Build knowledge about the research process and the topic under study by conducting short or more sustained research	6-8.LST.7.1	Conduct short research assignments and tasks to answer a question (including a self- generated question), or test a hypothesis, drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.	Weather and Climate: 3
	6-8.LST.7.2	Gather relevant information from multiple sources, using search terms effectively; annotate sources; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation (e.g., *APA or CSE*).	Chemical Reactions: 1 Weather and Climate: 9, 10 Land, Water and Human Interactions: 9, 13 Evolution: 16
	6-8.LST.7.3	Draw evidence from informational texts to support analysis, reflection, and research.	Chemistry of Materials: 13 Chemical Reactions: 3 Land, Water and Human Interactions: 13, 15 Reproduction: 1, 2, 3, 8 Evolution: 3, 14, 15
Physical Sciences (PS)	8.PS.1	Create models to represent the arrangement and charges of subatomic particles in an atom (protons, neutrons and electrons). Understand the significance that the currently 118 known chemical elements combine to form all the matter in the universe.	Chemistry of Materials 2, 6
	8.PS.2	Illustrate with diagrams (drawings) how atoms are arranged in simple molecules. Distinguish between atoms, elements, molecules, and compounds.	Chemistry of Materials: 2, 6, 7, 12
	8.PS.3	Use basic information provided for an element (atomic mass, atomic number, symbol, and name) to determine its place on the Periodic Table. Use this information to find the number of protons, neutrons, and electrons in an atom.	Not addressed

Indiana Science Standard		Learning Outcome	SEPUP Unit and Activity Number
	8.PS.4	Identify organizational patterns (radius, atomic number, atomic mass, properties and radioactivity) on the Periodic Table.	Not addressed at the middle school level
	8.PS.5	Investigate the property of density and provide evidence that properties, such as density, do not change for a pure substance.	Chemistry of Materials: 4
	8.PS.6	Compare and contrast physical change vs. chemical change. Analyze the properties of substances before and after substances interact to determine if a chemical reaction has occurred.	Chemical Reactions: 1, 2, 3, 4, 5
	8.PS.7	Balance chemical equations to show how the total number of atoms for each element does not change in chemical reactions and as a result, mass is always conserved in a closed system. (Law of Conservation of Mass.)	Chemical Reactions: 4, 7
Earth and Space Sciences (ESS)	8.ESS.1	Research global temperatures over the past century. Compare and contrast data in relation to the theory of climate change.	Weather and Climate: 16
	8.ESS.2	Create a diagram or carry out a simulation to describe how water is cycled through the earth's crust, atmosphere and oceans. Explain how the water cycle is driven by energy from the sun and the force of gravity.	Land, Water, and Human Interactions: 7, 8, 9 Earth's Resources: 7, 8
	8.ESS.3	Research how human consumption of finite natural resources (i.e. coal, oil, natural gas, and clean water) and human activities have had an impact on the environment (i.e. causes of air, water, soil, light, and noise pollution).	Earth's Resources: 13, 14 Weather and Climate: 16, 17 Land, Water, and Human Interactions: 5, 6, 9
Life Sciences (LS)	8.LS.1	Compare and contrast the transmission of genetic information in sexual and asexual reproduction. Research organisms that undergo these two types of reproduction.	Reproduction: 3, 8 (4, 5, 6, 9)
	8.LS.2	Demonstrate how genetic information is transmitted from parent to offspring through chromosomes via the process of meiosis. Explain how living things grow and develop.	Reproduction: 3, 4, 5, 6, 8, 9 (Sexual reproduction is used instead of the term "meiosis" but the mechanism is fully explained.)
	8.LS.3	Create and analyze Punnett squares to calculate the probability of specific traits being passed from parents to offspring using different patterns of inheritance.	Reproduction: 5

Indiana Science Standard		Learning Outcome	SEPUP Unit and Activity Number
	8.LS.4	Differentiate between and provide examples of acquired and genetically inherited traits.	Reproduction: 1, 2, **3**, 4, 5, 6, 7, 9, 14 Evolution: 3, 5
	8.LS.5	Explain how factors affecting natural selection (competition, genetic variations, environmental changes, and overproduction) increase or decrease a species' ability to survive and reproduce.	Evolution: 1, 2, 3, 4, 5, 6, 15 Reproduction: 10, 11
	8.LS.6	Create models to show how the structures of chromatin, chromosomes, chromatids, genes, alleles and deoxyribonucleic acid (DNA) molecules are related and differ.	Not addressed at the middle school level
	8.LS.7	Recognize organisms are classified into taxonomic levels according to shared characteristics. Explain how an organism's scientific name correlates to these shared characteristics.	Evolution: 7, 8, 11, 13 (Scientific name meaning not addressed)
	8.LS.8	Explore and predict the evolutionary relationships between species looking at the anatomical differences among modern organisms and fossil organisms.	Evolution: 7, 8, 9, 10 11, 12, 13
	8.LS.9	Examine traits of individuals within a species that may give them an advantage or disadvantage to survive and reproduce in stable or changing environment.	Evolution: 1, 2, 3, 4, 5, 6, 15 Reproduction: 10, 11
	8.LS.10	Gather and synthesize information about how humans alter organisms genetically through a variety of methods.	Evolution: 16
	8.LS.11	Investigate how viruses and bacteria affect the human body.	Evolution: 1 From Cells to Organisms: 1, 2, 14, 15
Engineering (E)	6-8.E.1	Identify the criteria and constraints of a design to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.	Land, Water, and Human Interactions: 7, 12
	6-8.E.2	Evaluate competing design solutions using a systematic process to identify how well they meet the criteria and constraints of the problem.	Land, Water, and Human Interactions: 12, 16
	6-8.E.3	Analyze data from investigations to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution	Chemical Reactions: 8, 9, 10, 11 Weather and Climate: 12

Indiana Science Standard		Learning Outcome	SEPUP Unit and Activity Number
		to better meet the criteria for success.	
	6-8.E.4	Develop a prototype to generate data for repeated investigations and modify a proposed object, tool, or process such that an optimal design can be achieved.	Chemical Reactions: 8, 9, 10, 11 Weather and Climate: 12