2017 STANDARDS ALIGNMENT
FLORIDA DEPARTMENT OF EDUCATION
INSTRUCTIONAL MATERIALS
COURSE STANDARDS/BENCHMARKS (Form IM7)

SUBJECT: Science
GRADE: 8
LEVEL: 2
COURSE TITLE: M/J Physical Science
COURSE CODE: 2003010
SUBMISSION TITLE: *Issues and Physical Science*
BID ID: 3360
PUBLISHER: Lab-Aids
PUBLISHER ID: 11603575801

* * * USERNAME: SEPUPphysical PASSWORD: Florida - the first time you link to the activity you will need to login to access the material * * *

BENCHMARK CODE	BENCHMARK	LESSONS WHERE BENCHMARK IS DIRECTLY ADDRESSED IN-DEPTH IN MAJOR TOOL
Select references to evidence of alignment have been linked. Non-linked activities may also be referenced if needed.		
SC.6.P.11.1	Explore the Law of Conservation of Energy by differentiating between potential and kinetic energy. Identify situations where kinetic energy is transformed into potential energy and vice versa.	IAPS **54-55**[1], 57, **58**
SC.6.P.12.1	Measure and graph distance versus time for an object moving at a constant speed. Interpret this relationship.	IAPS **74**, **75**

[1] Activity references are linked to the *Teacher's Edition* unless otherwise specified. While specific evidence of alignment may be *within* the activity, links are connected to the first page of the lesson to provide context. Reviewers may find it helpful to simultaneously reference the same activity number in the **Student Book**.

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SC.6.P.13.1	Investigate and describe types of forces including contact forces and forces acting at a distance, such as electrical, magnetic, and gravitational.	IAPS **56A**, **65A** (EM type forces), **80A** (gravitational)
SC.6.P.13.2	Explore the Law of Gravity by recognizing that every object exerts gravitational force on every other object and that the force depends on how much mass the objects have and how far apart they are.	IAPS **80A**
SC.6.P.13.3	Investigate and describe that an unbalanced force acting on an object changes its speed, or direction of motion, or both.	IAPS **80**, **81**
SC.7.P.10.1	Illustrate that the sun's energy arrives as radiation with a wide range of wavelengths, including infrared, visible, and ultraviolet, and that white light is made up of a spectrum of many different colors.	IAPS **96**
SC.7.P.10.2	Observe and explain that light can be reflected, refracted, and/or absorbed.	IAPS **70**, **95**
SC.7.P.10.3	Recognize that light waves, sound waves, and other waves move at different speeds in different materials.	IAPS **93**
SC.7.P.11.1	Recognize that adding heat to or removing heat from a system may result in a temperature change and possibly a change of state.	IAPS **59-62**
SC.7.P.11.2	Investigate and describe the transformation of energy from one form to another.	IAPS **54-56**, **58**, 64, 66, **68**

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SC.7.P.11.3	Cite evidence to explain that energy cannot be created nor destroyed, only changed from one form to another.	IAPS 57
SC.7.P.11.4	Observe and describe that heat flows in predictable ways, moving from warmer objects to cooler ones until they reach the same temperature.	IAPS 59, 60, 61
SC.8.P.8.1	Explore the scientific theory of atoms (also known as atomic theory) by using models to explain the motion of particles in solids, liquids, and gases.	IAPS 35-36
SC.8.P.8.2	Differentiate between weight and mass recognizing that weight is the amount of gravitational pull on an object and is distinct from, though proportional to mass.	IAPS 80A
SC.8.P.8.3	Explore and describe the densities of various materials through measurement of their masses and volumes.	IAPS 8, 9, 10
SC.8.P.8.4	Classify and compare substances on the basis of characteristic physical properties that can be demonstrated or measured; for example, density, thermal or electrical conductivity, solubility, magnetic properties, melting and boiling points, and know that these properties are independent of the amount of the sample.	IAPS 6, 9, 10, 12, 13, 14, 15

SC.8.P.8.5	Recognize that there are a finite number of elements and that their atoms combine in a multitude of ways to produce compounds that make up all of the living and nonliving things that we encounter.	IAPS 15, 16, 17
SC.8.P.8.6	Recognize that elements are grouped in the periodic table according to similarities of their properties.	IAPS 15, 16
SC.8.P.8.7	Explore the scientific theory of atoms (also known as atomic theory) by recognizing that atoms are the smallest unit of an element and are composed of subatomic particles (electrons surrounding a nucleus containing protons and neutrons).	IAPS 16
SC.8.P.8.8	Identify basic examples of and compare and classify the properties of compounds, including acids, bases, and salts.	IAPS 16, 18, 47, 48
SC.8.P.8.9	Distinguish among mixtures (including solutions) and pure substances.	IAPS 3, 5, 15, 16
SC.8.P.9.1	Explore the Law of Conservation of Mass by demonstrating and concluding that mass is conserved when substances undergo physical and chemical changes.	IAPS 25, 27
SC.8.P.9.2	Differentiate between physical changes and chemical changes.	IAPS 14 Background Information. See also IAPS 27, Background Information and DOING THE ACTIVITY step 2 and FOLLOW UP step 3.

		IAPS 65, especially BACKGROUND INFORMATION and TEACHING SUGGESTIONS, step 1
SC.8.P.9.3	Investigate and describe how temperature influences chemical changes.	IAPS 27 Background Information and DOING THE ACTIVITY step 2 and FOLLOW UP step 3.
SC.8.N.1.1	Define a problem from the eighth grade curriculum using appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.	SEPUP "Designing Investigation (DI)" activity types call for students to state hypotheses or predictions clearly, design a procedure, collect and analyze data, identify variables, state and defend conclusions. See for example IAPS 3, 38, 51, 54, 56A, 65, 66, 68, 74, 77, 98
SC.8.N.1.2	Design and conduct a study using repeated trials and replication.	As seen in DI type activities such as IAPS 74, 77
SC.8.N.1.3	Use phrases such as "results support" or "fail to support" in science, understanding that science does not offer conclusive 'proof' of a knowledge claim.	See for example "What is Science?" **Science Skills Student Sheet 8** in the TR[2].
SC.8.N.1.4	Explain how hypotheses are valuable if they lead to further investigations, even if they turn out not to be supported by the data.	See for example IAPS 33 and IAPS 33, which discusses the spread of cholera in London in 1849. *Also see **Literacy Student Sheet 1b** in the TR.*

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SC.8.N.1.5	Analyze the methods used to develop a scientific explanation as seen in different fields of science.	See for example "What is Science?" **Science Skills Student Sheet 8**
SC.8.N.1.6	Understand that scientific investigations involve the collection of relevant empirical evidence, the use of logical reasoning, and the application of imagination in devising hypotheses, predictions, explanations and models to make sense of the collected evidence.	IAPS **32-33**, **35**, **36**
SC.8.N.2.1	Distinguish between scientific and pseudoscientific ideas.	See for example "What is Science?" **Science Skills Student Sheet 8**
SC.8.N.2.2	Discuss what characterizes science and its methods.	See for example "What is Science?" **Science Skills Student Sheet 8**
SC.8.N.3.1	Select models useful in relating the results of their own investigations.	IAPS **18**, **20**, **35**, **36**
SC.8.N.3.2	Explain why theories may be modified but are rarely discarded.	IAPS **16**, "What is Science?" **Science Skills Student Sheet 8**
SC.8.N.4.1	Explain that science is one of the processes that can be used to inform decision making at the community, state, national, and international levels.	IAPS 4, 11, **29**, **52**, 72

SC.8.N.4.2	Explain how political, social, and economic concerns can affect science, and vice versa.	IAPS **29**, 52, 72, **88**
LAFS.68.RST.1.1	Cite specific textual evidence to support analysis of science and technical texts.	SEPUP has a well-developed approach to supporting literacy that includes analysis of technical texts. See, for example, the **SEPUP approach to literacy** (TR[3] pg. 76-112), and the following strategies below. *Readings with embedded "stop-to think" (STT) strategy:* IAPS **16**, **34**, 43, 80, 93 *Three level reading guides:* IAPS **21**, **23**, 50, 57, 64, 84, 93 *Anticipation guides:* IAPS 53, 55, 56, **63**, **67**, 71, 80, 96

[3] The Teacher Resources (TR) book is an additional, invaluable resource for teachers - many refer to it as their "ongoing Professional Development book." In the IM7 we reference supports from four main sections in the TR; Course Essentials, Diverse Learners, Assessment, and More Resources.

LAFS.68.RST.1.2	Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.	SEPUP has a well-developed approach to supporting literacy that includes determining central ideas and conclusions, as well as summarizing informational texts. See, for example, the **SEPUP approach to literacy** (TR pg. **76** -112), and the following strategies below. *Readings with embedded "stop-to think" (STT) strategy:* IAPS **16**, **34**, 43, 80, 93 *Three Level Reading Guides are used to analyze literal, interpretive, and applied levels of understanding of texts: See for example,* IAPS Student Sheets **21.1**, **23.1**, 50.2, 54.1, 84.2, 93.1
LAFS.68.RST.1.3	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.	SEPUP has ten distinct and different activity types, including labs and investigations (similar approaches but using less "wet" equipment). See for example all "laboratory" type activities: IAPS 5, **6**, 7, 8, 9, **14**, 18, 19, 24, 25, 26, 27, 28, 35, 37, 38, 41, 42, 43, 45, 46, 48, 51, 54, 56A, 59, 60, 61, 63, 65, 65A, 67, 68, 69, 74, 76, 77, 79, 82, 90, 91, 94, 95, 97, 98

LAFS.68.RST.2.4	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.	Key terms and vocabulary words and phrases are introduced in context as described in the TR[4] pg. **6-7**, and in the support for literacy in TR Sec. II, pg. **76-79**. The TR introduces new words and phrases in bold representing first time use, so teachers can plan effectively, see for example TE 12, 13. Chemical symbols are introduced in IAPS **15-16**, and followed up throughout the student book, e.g., Activity **36**.

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LAFS.68.RST.2.5	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.	SEPUP has a well-developed approach to supporting literacy that includes analysis of text. See, for example, the **SEPUP approach to literacy** (TR[5] pg. **76-112**), and the following strategies below. The Three-level Reading Guide (TLRG) is a built-in literacy strategy in SEPUP that helps students analyze the author's intent. The guide contains a series of statements from the three levels of understanding, listed here from lower to higher: *literal, interpretive,* and *applied*. Literal statements guide the student to look for ideas that are explicitly presented in the reading, in some cases using identical words or phrases. Interpretive statements require students to process information and recognize ideas that are often implicit. Applied statements do not have a single correct response, but are there for students to support or dispute based on information found in the reading as well as their own ideas. These applied statements sometimes relate the factual information in the reading to everyday life and may be used as the basis of a class discussion. A template for this strategy can be found on **Literacy**

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		Student Sheet 3 in the Teacher Resources, and TLRG can be found in IAPS Student Sheets 21.1, 23.1, 50.2, 57.1, 64.1, 84.2, 93.1.
LAFS.68.RST.2.6	Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.	Three-Level Reading Guides are used to infer the author's purpose and to predict meanings not stated explicitly. See for example: IAPS Student Sheets 21.1, 23.1, 50.2, 57.1, 64.1, 84.2
LAFS.68.RST.3.7	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).	SEPUP has a well-developed approach to supporting literacy that includes communicating scientific information with supplementary visual formats. See, for example, the SEPUP approach to literacy (TR[6] pg. 76-112), and the following strategies below. • Concept Maps: IAPS 34, 38, 83 • Venn Diagrams: IAPS 2, 47, 66, 93 • Talking Drawings: IAPS 39, 55, 84 • Makes/interprets graphs: IAPS 12, 22, 75, 78, 83, 92, 94

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LAFS.68.RST.3.8	Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.	*Discussion Webs* are graphic organizer that helps students arrange evidence they have gathered primarily from readings. **Literacy Student Sheet 6** provides a template for this strategy. Discussion webs support students in engaging with information from text and other sources and then with each other to come to an evidence-based conclusion. Any question or issue that involves two viewpoints or more than one potentially acceptable answer can be explored using this strategy. See for example TR pg. **85-86** and Student Sheets **52.1** and **88.1**.
LAFS.68.RST.3.9	Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.	SEPUP features ten different activity types to support different student learning styles. Some of these are text-based, such as readings and role plays, and some involve direct experience/hands on learning such as labs. Still others involve other modalities, such as view/reflect or discussions. All provide support for students to experience more than one way to learn. See for example, *SEPUP Supports Multiple Learning Styles*, TR[7] pg. **42-43**.

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LAFS.68.RST.4.10	By the end of grade 8, read and comprehend science/technical texts in the grades 6-8 text complexity band independently and proficiently.	SEPUP course materials are supported by numerous literacy support for reading comprehension, designed to help all students read grade-appropriate texts independently and proficiently. The SEPUP approach to supporting reading comprehension acquisition is outlined on TR[8] pg. **80-82** and a list of all literacy supports for Anticipation Guides, DART, Listen-Stop-Write, and Three Level Reading Guides can be found on TR pg. **77-79**. See for example IAPS Student Sheets **21.1**, **64.1**, **53.1**, **80.1**.
LAFS.68.WHST.1.1	Write arguments focused on discipline-specific content. Introduce claim(s) about a topic or issue, acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically. Support claim(s) with logical reasoning and relevant, accurate data and evidence that demonstrate an understanding of the topic or text, using credible sources. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence. Establish and maintain a formal style. Provide a concluding statement or section that follows from and supports the argument presented.	SEPUP has activities and assessment procedures that support claims w/evidence arguments, recognizing evidence versus opinion and using evidence to make educated decisions that require trade-offs**.** These are described in more detail in TR pg. **120-123**, the RE (recognizing evidence) and ET (evidence/tradeoffs) scoring guides can be found on TR pg. **136**. The following activities call for students to produce writing samples scored with the RE and ET scoring guides: RE: IAPS 13, **33**, **82**. ET: IAPS 11, 12, 13, **27**, 28, 29, 33, 40, 51, **52**, 64, 72, 82, 88, 94, 99.

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LAFS.68.WHST.1.2	Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories as appropriate to achieving purpose; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension. Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples. Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts. Use precise language and domain-specific vocabulary to inform about or explain the topic. Establish and maintain a formal style and objective tone. Provide a concluding statement or section that follows from and supports the information or explanation presented.	The SEPUP program requires daily writing in the student science notebook for the purpose of documenting scientific procedures and experiments. See TR[9] pg. 90-91 and Literacy Student Sheets 1a and 1b. This writing is assessed from time to time using the Communicating Skills (CS) and Organizing Scientific Ideas (SI) scoring guides, described on TR pg. 137. Designing Investigation (DI) Activity types call for students to write their own procedures. Examples of SI prompts: IAPS 27, 29, 33 (AQ 3), 39 (AQ 7), 51, 52, 85. Examples of CS prompts: 27 (AQ 2). Examples of DI prompts can be seen in the Procedures for IAPS 74 and 77. Three types of Writing Frames are provided, see the discussion on TR pg. 83 and Literacy Student Sheets 4a, 4b, and 4c. Note the SEPUP Vocabulary Approach on TR pg. 91-93.

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LAFS.68.WHST.2.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	The SEPUP program requires daily writing in the student science notebook for the purpose of documenting scientific procedures and experiments. See TR[10] pg. 82 and Literacy Student Sheets 1a and 1b. This writing is assessed from time to time using the Communicating Skills (CS) and Organizing Scientific Ideas (SI) scoring guides, described on TR pg. 137. Designing Investigation (DI) Activity types call for students to write their own procedures. Examples of SI prompts: IAPS 27, 29, 33 (AQ 3)[11], 39 (AQ 7), 51, 52, 85. Examples of CS prompts: 27 (AQ 2). Examples of DI prompts can be seen in the Procedures for IAPS 74 and 77. Three types of Writing Frames are provided, see the discussion on TR pg. 83 and Literacy Student Sheets 4a, 4b, 4c. Note the SEPUP Vocabulary Approach on TR pg. 91-93.

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LAFS.68.WHST.2.5	With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed.	SEPUP has a well-developed approach to supporting literacy that includes supporting student writing including revision of existing drafts. See, for example, the SEPUP approach *Strategies for Enhancing Students' Writing* (TR[12] pg. **82**), and the following strategies below. *Writing Frame.* IAPS Student sheets **33.2**, **72.2**, 88.2. *Writing Review (used for peer review of writing samples).* **Literacy Student Sheet 5 in the TR.**

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LAFS.68.WHST.2.6	Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.	SEPUP has a well-developed approach to supporting literacy that includes supporting student writing including revision of existing drafts. See, for example, the SEPUP approach *Strategies for Enhancing Students' Writing* (TR pg. **82**), and the following strategies below. *Writing Frame.* IAPS Student sheets **33.2**, **72.2**, 88.2. *Writing Review (used for peer review of writing samples).* **Literacy Student Sheet 5 in the TR**. Using these supports in conjunction with a classroom science blog can be a great asset for helping increase your students' literacy skills. A brief blog tutorial in included in the TR pages as **Literacy Student Sheet 12**.
LAFS.68.WHST.3.7	Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.	See for example IAPS **85**.
LAFS.68.WHST.3.8	Gather relevant information from multiple print and digital sources, using search terms effectively; 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.	See for example **Literacy Student Sheets 1d** and **1e**.

LAFS.68.WHST.3.9	Draw evidence from informational texts to support analysis reflection, and research.	Two of the distinct SEPUP activity types involve gathering information from informational texts: In "Reading" type activities, students extract important science content from passages of formal science writing. The concluding analysis items ask students to describe, explain, and reflect upon the information presented. See for example, IAPS 13, **16**, **21**, 23, 31, 34 In "Talking It Over" type activities, students read less formal text related to, and extending, topics covered by and observations made in, preceding labs and investigations. Students use this additional information and the accompanying analysis items to reflect upon and help analyze their previously acquired data. See for example, IAPS 11, **29**, **33**, 47, 52 Additionally, Three Level Reading Guides call for students to further analyze informational text, see for example IAPS student sheets 21.1, **23.1**, **50.2**, 57.1, 64.1

LAFS.68.WHST.4.10	Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	The built-in literacy support in SEPUP supports short and long-form student writing. A short summary of these strategies are provided here, and more information can be found in Section III of the *Teacher Resources*. • *Listen, Stop, Write.* (TR[13] pg. **81**). In this strategy, the teacher reads a section of text aloud, and stops for students to write down what they understood from the passage. As seen in IAPS **71.** • *Science Notebook Writing Guidelines.* (**Literacy Student Sheets 1a** and **1b**). As with most science classes, students keep a science notebook throughout the IAES course, making entries per the instructions in the Student Book that ask them to record data, observations, hypotheses, conclusions, and other information. Keeping a notebook helps students process ideas, keep track of data, and build scientific observation and scientific writing skills. • *Writing Frame.* IAPS Student sheets **33.2**, **72.2**, 88.2. • *Writing Review (used for peer review of writing samples).* **Literacy Student Sheet 5** in the TR

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LAFS.8.SL.1.1	Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others ideas and expressing their own clearly. Come to discussions prepared, having read or researched material under study; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion. Follow rules for collegial discussions and decision-making, track progress toward specific goals and deadlines, and define individual roles as needed. Pose questions that connect the ideas of several speakers and respond to others questions and comments with relevant evidence, observations, and ideas. Acknowledge new information expressed by others, and, when warranted, qualify or justify their own views in light of the evidence presented.	SEPUP supports discussion in the science classroom, see for example: ● Strategies for Facilitating Group Discussion (TR[14] pg. 84-85). ● Guidelines for Oral Presentations (TR pg. 86) ● "Talking it Over" activities, IAPS 11, 29, 33, 44, 47, 49, 52, 73, 87, 99. ● Discussion Webs IAPS 52.1, 88.1. ● Walking Debates, IAPS 73. ● The Communication Skills support for assessment on TR pg. 137. ● Examples of Communication Skills prompts: 27 (AQ 2)[15].

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LAFS.8.SL.1.2	Analyze the purpose of information presented in diverse media and formats (e.g., visually, quantitatively, orally) and evaluate the motives (e.g., social, commercial, political) behind its presentation.	See *Media Literacy*, **Literacy Student Sheet 1e** in the TR.
LAFS.8.SL.1.3	Delineate a speaker's' argument and specific claims, evaluating the soundness of the reasoning and relevance and sufficiency of the evidence and identifying when irrelevant evidence is introduced.	Student progress in this area is assessed using the Recognizing Evidence (RE) scoring guide (TR[16] pg. **136**). And the Organizing Scientific Ideas (SI) scoring guide (TR pg. **137**) Activities that show this skill include IAPS **33 (AQ 3)**[17], **39 (AQ 7)**, **82 (AQ3)**.

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LAFS.8.SL.2.4	Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.	SEPUP has activities and assessment scoring guides designed to support communicating scientific information, including oral speaking skills such as enunciation, projection, and eye contact, as well as the ability to logically organize arguments and evidence related to a problem. See: ● Guidelines for Oral Presentations (TR pg. **86**) ● "Talking it Over" activities, IAPS 11, **29**, **33**, 44, 47, 49, 52, 73, 87, 99. ● Discussion Webs, IAPS **52.1**, **88.1**. ● Walking Debates, IAPS **73**. ● Communication Skills support for assessment on TR pg. **137**. ● Examples of Communication Skills prompts: IAPS **27 (AQ 2)**[18].
LAFS.8.SL.2.5	Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest.	Besides using print-based sources, SEPUP uses nontraditional formats such as media viewing and computer simulations. We also have many online videos of the labs themselves using our online LABsent ® program. See for example, LABsent **Activity 65: Chemical Batteries**, **Activity 74: Measuring Speed,** and **Activity 86: Investigating Center of Mass**

[18] This activity specifically references the Analysis Questions (AQ) located near the end of the activity set. Again, the link connects to the first page in the lesson but the additional AQ references should be noted.

MAFS.6.SP.2.5	Summarize numerical data sets in relation to their context, such as by: Reporting the number of observations. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.	See for example IAPS **76 Extension**: Comparing Measures of Central Tendency
MAFS.7.SP.3.5	Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around ½ indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.	See for example IAPS **87 Extension**: Introducing Basic Probability
MAFS.8.F.2.5	Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.	See for example IAPS **75** and **Student Sheet 75.1**, Interpreting Motion Graphs

MAFS.8.G.3.9	Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.	IAPS **8 (Extension Activity)**

ELD.K12.ELL.SC.1	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Science.	SEPUP provides ELL students with rich opportunities for written and oral communication for social and instructional purposes at school. This is accomplished through the use of the following strategies: • The complete student book is presented also in Spanish language format. • Vocabulary is introduced with operational definitions that connect concepts to learning experiences. (See TR[19] pg. **91-93**) • 4-2-1 cooperative groupings encourage student interactions in an unthreatening environment (see TR pg. **3**). • Strategies for facilitating Group Discussion (see TR pg. **84-85**). This includes informal, pair talk and formal presentations. • Discussion Webs (TR pg. **85-86**), graphic organizers that help students think ahead about what they want to say about what they have done or read. As seen in IAPS Student Sheets **52.1**, **88.1**. • Oral Presentation (TR pg. **86**), guidelines for formal oral communication. • Walking Debates (TR pg. **87**), tools that allow students to express their opinions about issues by moving from one area of the room to another. As seen in IAPS **73**.

[19] The Teacher Resources (TR) book is an additional, invaluable resource for teachers - many refer to it as their "ongoing Professional Development book." In the IM7 we reference supports from four main sections in the TR; Course Essentials, Diverse Learners, Assessment, and More Resources.

ELD.K12.ELL.SI.1	English language learners communicate for social and instructional purposes within the school setting.	SEPUP provides ELL students with rich opportunities for written and oral communication for social and instructional purposes at school. This is accomplished through the use of the following strategies: • Vocabulary is introduced with operational definitions that connect concepts to learning experiences. (See TR[20] pg. 91-93.) • 4-2-1 cooperative groupings encourage student interactions in an unthreatening environment (see TR pg. 3). • Strategies for facilitating Group Discussion (see TR pg. 84-85). This includes informal, pair talk and formal presentations. • Discussion Webs (TR pg. 85-86), graphic organizers that help students think ahead about what they want to say about what they have done or read. As seen in IAPS Student Sheets 52.1, 88.1. • Oral Presentation (TR pg. 86), guidelines for formal oral communication. • Walking Debates (TR pg. 87), tools that allow students to express their opinions about issues by moving from one area of the room to another. As seen in IAPS 73.

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SC.6.N.1.1	Define a problem from the sixth grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.	SEPUP "Designing Investigation (DI)" activity types call for students to state hypotheses or predictions clearly, design a procedure, collect and analyze data, identify variables, state and defend conclusions. See for example IAPS **3**, 38, 51, 54, 56A, **65**, 66, 68, **74**, 77, 98
SC.6.N.1.2	Explain why scientific investigations should be replicable.	IAPS **35**, 45, **54**, 94 See also "What is Science?" **Science Skills Student Sheet 8** in the TR[21].

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SC.6.N.1.3	Explain the difference between an experiment and other types of scientific investigation, and explain the relative benefits and limitations of each.	SEPUP has laboratory type (IAPS 5, **14**, **25**, 35, etc.) as well as investigation (**12**, **22**, 32, etc.) and problem solving (IAPS 3, **78**) activities that highlight the differences in each line of inquiry. See also, "What is Science?" **Science Skills Student Sheet 8** in the TR[22].
SC.6.N.1.4	Discuss, compare, and negotiate methods used, results obtained, and explanations among groups of students conducting the same investigation.	SEPUP "Designing Investigation (DI)" activity types call for students to design a procedure, collect and analyze data, identify variables, state and defend conclusions. See for example IAPS **3**, 38, 51, 54, 56A, **65**, 66, 68, **74**, 77, 98
SC.6.N.1.5	Recognize that science involves creativity, not just in designing experiments, but also in creating explanations that fit evidence.	SEPUP activities encourage student creativity. See for example, IAPS 23, 32, **39**, **85**. See "What is Science?" **Science Skills Student Sheet 8** in the TR

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SC.6.N.2.1	Distinguish science from other activities involving thought.	See "What is Science?" **Science Skills Student Sheet 8** in the TR
SC.6.N.2.2	Explain that scientific knowledge is durable because it is open to change as new evidence or interpretations are encountered.	IAPS **16** (examines changes in beliefs about the structure of matter since the ancient Greeks), **33** (cause of cholera epidemics in 19th century London) See "What is Science?" **Science Skills Student Sheet 8** in the TR
SC.6.N.2.3	Recognize that scientists who make contributions to scientific knowledge come from all kinds of backgrounds and possess varied talents, interests, and goals.	IAPS **16**, **33**, 80.
SC.6.N.3.1	Recognize and explain that a scientific theory is a well-supported and widely accepted explanation of nature and is not simply a claim posed by an individual. Thus, the use of the term theory in science is very different than how it is used in everyday life.	IAPS **16**, 36, 37, **48**, 49, 57, **96**

SC.6.N.3.2	Recognize and explain that a scientific law is a description of a specific relationship under given conditions in the natural world. Thus, scientific laws are different from societal laws.	IAPS 25, 55, 57, 80, 97
SC.6.N.3.3	Give several examples of scientific laws.	IAPS 25, 55, 57, 80, 97
SC.6.N.3.4	Identify the role of models in the context of the sixth grade science benchmarks.	SEPUP has specific activity types dealing with development and use of models, and each time students create or use a model they are encouraged to consider the benefits and limitations of the models. See for example IAPS 17, 36, 39, 70, 86.

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SC.7.N.1.1	Define a problem from the seventh grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.	SEPUP "Designing Investigation (DI)" activity types call for students to state hypotheses or predictions clearly, design a procedure, collect and analyze data, identify variables, state and defend conclusions. See for example IAPS **3**, 38, 51, 54, 56A, **65**, 66, 68, **74**, 77, 98
SC.7.N.1.2	Differentiate replication (by others) from repetition (multiple trials).	Repetition/multiple trials: IAPS 46, 51, **74**, **76**, **77**, 82 Replication: IAPS **35**
SC.7.N.1.3	Distinguish between an experiment (which must involve the identification and control of variables) and other forms of scientific investigation and explain that not all scientific knowledge is derived from experimentation.	Contrast laboratory-type investigations, such as IAPS 35, **37**, **41**, with investigations, such as IAPS **22**, **32**, 85, which present more as "thought experiments" and theory-building exercises, e.g., IAPS **16**, **48**. See "What is Science?" **Science Skills Student Sheet 8** in the TR

SC.7.N.1.4	Identify test variables (independent variables) and outcome variables (dependent variables) in an experiment.	IAPS 23, **35**, **37**, **41**, 78, 80, 84,
SC.7.N.1.5	Describe the methods used in the pursuit of a scientific explanation as seen in different fields of science such as biology, geology, and physics.	See "What is Science?" **Science Skills Student Sheet 8** in the TR
SC.7.N.1.6	Explain that empirical evidence is the cumulative body of observations of a natural phenomenon on which scientific explanations are based.	See "What is Science?" **Science Skills Student Sheet 8** in the TR

SC.7.N.1.7	Explain that scientific knowledge is the result of a great deal of debate and confirmation within the science community.	IAPS 16, 25, 80; See also "What is Science?" Science Skills Student Sheet 8 in the TR
SC.7.N.3.1	Recognize and explain the difference between theories and laws and give several examples of scientific theories and the evidence that supports them.	Theories: IAPS 16, 36, 37, 48, 49, 57, 96 Laws: IAPS 25, 55, 57, 80, 97 See "What is Science?" Science Skills Student Sheet 8 in the TR
SC.7.N.3.2	Identify the benefits and limitations of the use of scientific models.	SEPUP has specific activity types dealing with development and use of models, and each time students create or use a model they are encouraged to consider the benefits and limitations of the models. See for example IAPS 17, 36, 39, 70, 86.