TPS STEAM into Science Grade K

TPS STEAM into Science Grade K Executive Summary

Section 1. Science-Related Texas Essential Knowledge and Skills (TEKS) and English Language Proficiency Standards (ELPS) Alignment

Grade	TEKS Student %	TEKS Teacher %	ELPS Student %	ELPS Teacher %
Grade K	100%	100%	100%	100%
Grade 1	100%	100%	100%	100%
Grade 2	100%	100%	100%	100%

Section 2. Instructional Anchor

- The materials are partially designed to strategically and systematically integrate scientific and engineering practices, recurring themes and concepts, and grade-level content as outlined in the TEKS.
- The materials sometimes anchor the learning in phenomena and problems as the key lever for driving learning and student mastery of disciplinary knowledge and skills.

Section 3. Knowledge Coherence

- The materials are designed to build knowledge systematically, coherently, and accurately.
- The materials provide some educative components to support teachers' content and coherence knowledge.

Section 4. Productive Struggle

- The materials provide some opportunities for students to engage in productive struggle through sensemaking that involves reading, writing, thinking, and acting as scientists and engineers.

Section 5. Evidence-Based Reasoning and Communicating

- The materials partially promote students' use of evidence to develop, communicate, and evaluate explanations and solutions.
- The materials provide teacher guidance to support student reasoning and communication skills.

Section 6. Progress Monitoring

- The materials include a variety of TEKS-aligned and developmentally appropriate assessment tools.
- The materials include some guidance that explains how to analyze and respond to data from assessment tools.

- The assessments are partially clear and easy to understand.

Section 7. Supports for All Learners

- The materials provide guidance on fostering connections between home and school.
- The materials include some listening, reading, writing, and speaking supports to help Emergent Bilinguals meet grade-level science content expectations.
- The materials partially include a variety of research-based instructional methods that appeal to a variety of learning interests and needs.
- The materials include some guidance, scaffolds, supports, and extensions that maximize student learning potential.

Section 8. Implementation Supports

- The materials include year-long plans with practice and review opportunities that support instruction.
- The materials include some classroom implementation support for teachers and administrators.
- The materials provide some implementation guidance to meet variability in program design and scheduling.

Section 9. Design Features

- The visual design of materials is sometimes clear and easy to understand.
- The materials are not designed to engage and support student learning with the integration of digital technology.
- The digital technology or online components are not developmentally and grade-level appropriate and do not provide support for learning.

Section 10. Additional Information

- The publisher submitted the technology, price, professional learning, and additional language supports.

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Indicator 2.1

Materials are designed to strategically and systematically integrate scientific and engineering practices, recurring themes and concepts, and grade-level content outlined in the TEKS.

1	Materials provide multiple opportunities for students to develop, practice, and demonstrate mastery of grade-level appropriate scientific and engineering practices as outlined in the TEKS.	M
2	Materials provide multiple opportunities to make connections between and within overarching concepts using recurring themes.	PM
3	Materials strategically and systematically develop students' content knowledge and skills as appropriate for the concept and grade level as outlined in the TEKS.	M
4	Materials include sufficient opportunities, as outlined in the TEKS, for students to ask questions and plan and conduct classroom, laboratory, and field investigations and to engage in problem-solving to make connections across disciplines and develop an understanding of science concepts.	M

Partial Meets | Score 2/4

Materials partially meet the criteria for this indicator. Materials are partially designed to strategically and systematically integrate scientific and engineering practices, recurring themes and concepts, and grade-level content as outlined in the TEKS.

Materials provide opportunities for students to develop, practice, and demonstrate mastery of grade-level appropriate scientific and engineering practices as outlined in the TEKS. Materials provide some opportunities to make connections between and within overarching concepts using recurring themes. Materials strategically and systematically develop students' content knowledge and skills as appropriate for the concept and grade level as outlined in the TEKS. Materials include opportunities, as outlined in the TEKS, for students to ask questions, plan and conduct classroom, laboratory, and field investigations, and engage in problem-solving to make connections across disciplines and develop an understanding of science concepts.

Evidence includes, but is not limited to:

Materials provide multiple opportunities for students to develop, practice, and demonstrate mastery of grade-level appropriate scientific and engineering practices as outlined in the TEKS.

- Materials provide opportunities for students to practice grade-level appropriate scientific practice. Examples in the *Learn By Doing STEAM Activity Reader Book - Kindergarten Teacher Edition* include Chapter 2, Activity 2, where students experiment with light and shadows. In Chapter 3, Activity 1, students explore force and motion with a ramp. In Chapter 7, students observe and predict the weather. In Science is a Verb, a lesson is found in the *Teacher Textbook - Kindergarten Science,* where students evaluate how some plants adapt to change better using inquiry. Additionally, students use scientific practices to conduct a descriptive investigation, collect observations and measurements, and analyze data to derive meaning.

- Materials allow students to practice grade-level appropriate engineering practices in the *Learn By Doing STEAM Activity Reader Book - Kindergarten Teacher Edition*. In Chapter 1, Activity 6, students use water and sand to try to build the tallest sand castle. In Activity 4, students design a sunshade. In Chapter 3, Activity 5, students design and build models of playgrounds. Helicopter construction is an example of a STEM project. Students follow the DAPIC process described in the *Teacher Program Guide - Grades K-8 Scienc*e: "Students Define, Assess, Plan, Implement, and Communicate." Students use grade-level appropriate scientific and engineering practices. Once students learn "what the magnet sticks do," they modify the construction materials so that they can pick them up and haul them to a remote construction site. They draw their flight path on a room map so they can experience straight, curved, and zigzag lines. The construction materials are placed in an open-sided box with toilet paper across the top, simulating fog at the pick-up site. A classmate has to use light signals to direct the pilot for the right maneuvers to pick up the materials. Students are asked how they think the various materials will respond to heat and cold, but these experiments are not conducted, only discussed. Students continue to experiment with magnets in the art projects that follow and, within those projects, apply scientific practices. For example, pairs of students complete the experiment from the story and compare actual results to those in the story.
- Materials provide opportunities for students to demonstrate mastery of grade-level appropriate SEPs as outlined in the TEKS. For example, Online Library – Assessment tools – Assessment generator – TEKS 1 A and B – Students complete test questions for individual TEKS by breakout. Teachers are provided with leveled questions by TEKS/performance expectation level. Teachers can assign questions to individual students or the whole class. The content can be for one performance expectation or a selection and can be projected in class and or saved as a PDF personalized assessment quiz/test. Students can practice applying their SEPs knowledge.
- Online Library – Assessment tools – Interactive software tool – TEKS 1 A and B – Students complete test questions for individual TEKS. This is a web-based tool and houses assessments for TEKS. Teachers can add their own content. The tool automates the grading of all multiple-choice questions. There are questions for all TEKS. The program does purposefully include content for below-, at-, and above-grade-level students.
- Materials provide opportunities for students to develop, practice, and demonstrate mastery of grade-level scientific practices. The *Learn By Doing STEAM Activity Reader Book - Kindergarten Student Edition* introduces the scientific method and design engineering process. In Chapter 2, students apply the scientific method to the activity. They observe, hypothesize, test, discuss results, and come to a conclusion. The *Learn By Doing STEAM Activity Reader Book - Kindergarten Teacher Edition* has an introduction section describing the scientific method that provides information for the teachers on how to implement this practice in the classroom. Each activity that uses the scientific method requires significant teacher direction, monitoring, and guidance of the students, which is not explicitly stated, while also allowing them to explore and then communicate with their class. The process for the scientific method has been simplified for this age group together with the investigations. The scientific method is referred to heavily throughout the materials.

Materials provide multiple opportunities to connect between and within overarching concepts using recurring themes.

- Materials sometimes include opportunities for students to make connections within or between overarching concepts using recurring themes. Most lessons provide connections to the recurring themes within concepts. However, Lesson 7A - TRAD - Magnets, The *Teacher Textbook* -

Kindergarten Science provides instruction on magnets and things that are or are not magnetic. There isn't a connection to any of the recurring themes here, though the natural connection is identifying the properties of matter; being magnetic or nonmagnetic is not identified in the materials as a property of matter (TEKS K.5E).

- Materials include opportunities for students to make connections within, but rarely between, overarching concepts using recurring themes. Most lessons provide connections to the recurring themes within concepts. The Patterns, lesson 9A - TRAD, in the *Teacher Textbook - Kindergarten Science* provides teacher guidance to support student understanding of patterns within the concept of night and day as well as seasons. However, there is no connection made between patterns of day and night with other concepts, such as patterns in plant structure or shadows.
- The materials provide some connections between and within overarching concepts through the narrative texts in the *Learn By Doing STEAM Activity Reader Book - Kindergarten Teacher Edition*; however, while the text weaves stories of different science disciplines together, this doesn't equate to an opportunity because the direct connections between the concepts are not articulated fully by the materials, either by questions posed to students, or guidance provided to the teacher to make the connections.

Materials strategically and systematically develop students' content knowledge and skills as appropriate for the concept and grade level as outlined in the TEKS.

- Materials provide guidance in developing content knowledge systematically. For example, in the *Learn By Doing STEAM Activity Reader Book - Kindergarten Teacher Edition*, there is an Essential Content Guide that shows how the program is structured and gives an overview of the sequence of units, showing how the program systematically presents content connecting to concepts for students to make connections between content areas throughout the program. The lessons build on students engaging their prior knowledge for the new lesson. For example, the lesson How can a magnet move paper clips? helps build students' background knowledge before moving on to the lesson about magnets.
- Materials support teachers in developing student content, concepts, and skills by giving them resources and cues at varying points in the lessons and units. For example, a lesson on matter in the *Learn By Doing STEAM Activity Reader Book - Kindergarten Teacher Edition* contains idea boxes that explain, describe, and make connections to develop conceptual understanding. In the *Learn By Doing STEAM Activity Reader Book - Kindergarten Teacher Edition*, the materials strategically develop students' content knowledge and skills for kindergarten graders. Materials in the *Teacher Textbook - Kindergarten Science* lesson plan on Energy guide teachers to enhance student learning using scaffolding information, background text, common misconceptions, teacher tips, and support suggestions for special populations. The *Teacher Textbook - Kindergarten Science* demonstrates how the content is designed to develop and build student content knowledge with a Scope and Sequence explaining how the program is structured, showing how students can make connections across units.

Materials include sufficient opportunities, as outlined in the TEKS, for students to ask questions and plan and conduct classroom, laboratory, and field investigations and to engage in problem-solving to make connections across disciplines and develop an understanding of science concepts.

- Materials provide opportunities for questioning and for students to plan and conduct classroom, laboratory, and field investigations. For example, the *Teacher Textbook - Kindergarten Science*

contains stories the teacher reads of the investigations done by a fictional class/teacher. The students then base their thoughts on the fictional class. The students are not investigating, designing, or planning. Then, in Magnets, there is a story for experience, followed by questions asked to the class. In the *Learn By Doing STEAM Activity Reader Book*, idea boxes are situated throughout the text as points of discussion that provide situations for students to generate questions related to the chapter content. An example is the *Learn By Doing STEAM Activity Reader Book - Kindergarten Teacher Edition,* idea box 4. Guidance on using the idea boxes can be found in the teacher guidance section on Comprehension. The main premise found in the *Learn By Doing STEAM Activity Reader Book - Kindergarten Teacher Edition* introduction section is for the students to come up with a hypothesis based on questions that the students have. The discussion stage generates questions and answers based on the students' experience from the investigation.

- Materials include opportunities for students to solve problems, make connections across disciplines, and develop science concepts. In the *Teacher Textbook - Kindergarten Science*, students have a math challenge. There is a word problem in which students must draw and decide how many balloons there are altogether. Also, in the *Teacher Textbook - Kindergarten Science*, students are asked to provide evidence to show that air is all around us. Students use a device such as a windsock, ribbon, or pinwheel to demonstrate that the wind is the movement of air. Next, they draw a picture to show what happened.
- The *STEAM Activity Guide - Kindergarten Teacher Edition* also includes a Scientific and Engineering Practice Project that allows students to plan and conduct an open-ended engineering project. In Activity 3, in the *Learn By Doing STEAM Activity Reader Book - Kindergarten Teacher Edition*, there are opportunities for the students to problem-solve. They are asked to record the numbers of pillbugs and see if they increase or decrease and what this indicates (they have or have not met some of the basic needs of the pillbugs). Based upon their observations of the pill bugs, they are asked what the pillbug habitat's living and nonliving parts are.
- The *Learn By Doing STEAM Activity Reader Book - Kindergarten Teacher Edition* includes opportunities for students to engage in problem-solving, make connections across disciplines, and develop an understanding of science concepts. For example, kindergarten students make connections between science and math when they use mathematical skills to present information about growing plants in a graph. Students determine how many animals belong in each of three or four groups. Kindergarten students connect science and literacy after studying My Reused Trash. Students identify and explain the problem, propose solutions, and make predictions.
- The materials allow students to practice SEPs by designing solutions and investigating the efficiency of the design. The activity in the *Teacher Textbook - Kindergarten Science* asks students to identify problems, design, build, and test prototypes, and record observations to determine which model works best. The materials provide opportunities for problem-solving in several units across the grade level. For example, the materials present students with a challenging engineering design process through the text in the *Learn By Doing STEAM Activity Reader Book - Kindergarten Student Edition*. The materials also provide criteria with which to evaluate their prototype. In Chapter 6, the materials provide multiple opportunities for students to apply their understanding of defining a problem, generate solutions based on criteria and within constraints, and conduct a fair test to evaluate their prototype. The *STEAM Activity Guide - Kindergarten Student Edition* provides a SEPs project, which includes student-led activities and problem-solving.

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Indicator 2.2

Materials anchor the learning in phenomena and problems as the key lever for driving learning and student mastery of disciplinary knowledge and skills.

1	Materials embed phenomena and problems across lessons to support students in constructing, building, and developing knowledge through authentic application and performance of scientific and engineering practices, recurring themes and concepts, and grade-level content as outlined in the TEKS.	PM
2	Materials intentionally leverage students' prior knowledge and experiences related to phenomena and engineering problems.	M
3	Materials clearly outline for the teacher the scientific concepts and goals behind each phenomenon and engineering problem.	M

Partial Meets | Score 2/4

Materials partially meet the criteria of this indicator. Materials partially anchor the learning in phenomena and problems as the key lever for driving learning and student mastery of disciplinary knowledge and skills.

Materials partially embed phenomena and problems across lessons to support students in constructing, building, and developing knowledge through authentic application and performance of scientific and engineering practices, recurring themes and concepts, and grade-level content as outlined in the TEKS. Materials intentionally leverage students' prior knowledge and experiences related to phenomena and engineering problems. Materials clearly outline for the teacher the scientific concepts and goals behind each phenomenon and engineering problem.

Evidence includes but is not limited to:

Materials embed phenomena and problems across lessons to support students in constructing, building, and developing knowledge through authentic application and performance of scientific and engineering practices, recurring themes and concepts, and grade-level content as outlined in the TEKS.

- Materials embed phenomena in some instructional components to support students in constructing, building, and developing knowledge. For example, in the *Learn By Doing STEAM Activity Reader Book - Kindergarten Teacher Edition*, the materials provide narrative texts that provide access to phenomena that provide a springboard for learning. However, in the *Teacher Textbook - Kindergarten Science* most of the chapters begin with Teacher Guided Questions to Inquiry, which provides a series of questions for the teacher to ask the students to begin the learning cycle. While the questions are designed well, they are not a replacement for observing phenomena.
- Materials provide opportunities for students to develop, evaluate, and revise their thinking as they define problems. In the *Teacher Textbook - Kindergarten Science*, some project-based lessons center around phenomena. Students then design solutions. However, the ideas presented for problems to be solved are not phenomena-inspired ideas. They are problems presented by the teacher.

- The materials provide problems for students to address; however, the problems are often embedded with a specific expected outcome provided by the materials and not created by the students, making the application and performance of engineering practices less than authentic. For example, in Chapter 1 of the *Learn By Doing STEAM Activity Reader Book - Kindergarten Teacher Edition*, students are provided with a problem of how a dog "gets very hot in the garden, and there is no shade. Design and build a solution to provide shade." The problem is that the dog gets hot and the materials lead students to design and build a solution that provides shade, rather than to design and build a solution that keeps the dog cool.
- The materials provide some direct connections to the recurring themes and concepts across disciplines as the TEKS require. For example, there are opportunities for students to consider structure and function as it relates to parts of a plant, but there are no opportunities to make a connection to how that relates to systems such as the Earth, Sun, and Moon.

Materials intentionally leverage students' prior knowledge and experiences related to phenomena and engineering problems.

- Materials intentionally leverage students' prior knowledge and experiences. For example, in the *Learn By Doing STEAM Activity Reader Book*, in Chapter 10, Mystery Plants, in the idea boxes there are questions for students about what they think will happen in different scenarios. They need to have prior knowledge to predict. In the *Learn By Doing STEAM Activity Reader Book - Kindergarten Teacher Edition*, the text suggests having students bring photos of their parents when they were children to discuss how similar they look to their parents while learning about living things. In the *Teacher Textbook - Kindergarten Science* chapter on energy, there is information on how to encourage students to use their prior knowledge. Students should know how to use their five senses to observe the world.
- Materials provide scaffolding information to accommodate different entry points to learning phenomena. It lists background information that students should know and states that if students need this background knowledge, the teacher will give them opportunities to gain it before commencing the standard.

Materials clearly outline for the teacher the scientific concepts and goals behind each phenomenon and engineering problem.

- Materials guide the teacher on the goals behind each phenomenon. In the *Learn By Doing STEAM Activity Reader Book - Kindergarten Teacher Edition*, materials list objectives that teachers are expected to meet by following the lesson. The textbook lessons contain an objective that outlines the scientific goals for each task. In the Air lesson, the objective states, "Students will demonstrate that air is all around us and observe that wind is moving."
- Materials guide the scientific concepts behind lessons. For example, the *Teacher Textbook - Kindergarten Science* lessons contain a section called The Science that outlines the scientific concepts for each lesson. The Air lesson lists the characteristics and science behind air and wind. The *Teacher Program Guide - Grades K-8 Science* offers explanations and reasoning, starting with the order in which the teacher should deliver the materials, continuing with TEKS and vertical alignment, assessment, and concluding with an explanation of how the content supports teachers.

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Indicator 3.1

Materials are designed to build knowledge systematically, coherently, and accurately.

1	Materials are vertically aligned and designed for students to build and connect their knowledge and skills within and across units and grade levels.	M
2	Materials are intentionally sequenced to scaffold learning in a way that allows for increasingly deeper conceptual understanding.	M
3	Materials clearly and accurately present grade-level-specific core concepts, recurring themes and concepts, and science and engineering practices.	M
4	Mastery requirements of the materials are within the boundaries of the main concepts of the grade level.	M

Meets | Score 6/6

The materials meet the criteria for this indicator. Materials are designed to build knowledge systematically, coherently, and accurately.

Materials are vertically aligned and designed for students to build and connect their knowledge and skills within and across units and grade levels. Materials are intentionally sequenced to scaffold learning in a way that allows for an increasingly deeper conceptual understanding. Materials clearly and accurately present grade-level-specific core concepts, recurring themes and concepts, and science and engineering practices. Mastery requirements of the materials are within the boundaries of the main concepts of the grade level.

Evidence includes but is not limited to:

Materials are vertically aligned and designed for students to build and connect their knowledge and skills within and across units and grade levels.

- Materials are designed for students to build and connect their knowledge and skills within and across units. For example, in the *Learn By Doing STEAM Activity Reader Book - Kindergarten Teacher Edition*, when looking at a specific TEKS, Earth and Space, regarding Earth materials, materials explore shapes, color, size, and texture and make observations as a foundation for the next grade level. Also, in the *STEAM Activity Guide,* Amelia Rose Explores Earth and Space, the teacher reads through the story and activity. The student is introduced to vocabulary and describing words for the natural world and its properties throughout this kinder activity.
- Materials are aligned and provide connections to prior knowledge. Materials offer a K-8 program and provide a grade-level vertical alignment document demonstrating how students build and connect knowledge across grade levels. The document titled Horizontal and Vertical Alignment Information states, “As students progress within each grade, the STEAM storybooks are the first level in a series of TPS curricular materials, horizontally aligned to allow the students to engage in a curriculum that builds on knowledge and skills aligned with the Texas Essential Knowledge and Skills.”
- Materials build knowledge within each chapter. Examples include the *Learn By Doing STEAM Activity Reader Book*, which begins with the storyline, Idea Boxes for discussion, and activities section. Science knowledge is also built as students move throughout the chapters. The *Learn By*

Doing STEAM Activity Reader Book builds content knowledge of energy and force in this manner. Chapter 2 introduces the concept of energy and its different forms with Idea Box 1. The students investigate light and sound energy with Idea Box 2 and Activities 3 and 5. In Chapter 3, students revisit the concept of energy and its role in creating forces that do work. Energy is investigated in Idea Boxes 1 and 3 and Activities 1 and 5. In Chapter 4, magnetism as a force is introduced, and in Activity 2, students explore magnets. The energy concept recurs in Chapter 6, regarding the energy emitted by the sun, in Idea Box 1.

- Materials provide vertical content knowledge in the scaffolding information at the beginning of each chapter. Examples include scaffolding information in the *Teacher Textbook - Kindergarten Science*, which includes what most kindergarten students should know and future TEKS that will build upon the grade K standard through grade 5.
- Materials present content in a way that builds complexity within and across units. In the chapter on Matter and Energy, students begin by exploring objects and finding different ways to group them. For example, in the *Teacher Textbook - Kindergarten Science,* students sort objects into bigger and smaller ones. The TEKS for each grade level are listed in the *Teacher Program Guide - Grades K-8 Science.*

Materials are intentionally sequenced to scaffold learning in a way that allows for increasingly deeper conceptual understanding.

- The *Teacher Program Guide - Grades K-8 Science* describes the lesson progression with each resource. The guide explicitly states teachers begin each unit with the *Learn By Doing STEAM Activity Reader Book - Grade K Teacher Edition* and then move to the exploration in the *Teacher Textbook - Grade K Science*. The *Learn By Doing STEAM Activity Reader Book - Grade K Teacher Edition* introduces all chapters with fictional characters asking and answering questions. Materials intentionally provide content information through the narrative text before students move to exploration. The lesson plans included in the *Teacher Textbook - Grade K Science* begin with students engaging with media, discussing what they understood, have seen before, or sparked curiosity. The teacher then begins the instruction, providing steps to complete the investigation if materials offer one.
- Materials include a concrete progression before abstract reasoning when presenting concepts that allow for an increasingly deeper conceptual understanding. For example, in the *Learn By Doing STEAM Activity Reader Book - Kindergarten Student Edition*, Chapter 2, Activity 3, students experiment with light to examine the behavior of a light source before drawing a representation of their results in the book. In Chapter 2, Activity 5, students explore how heat energy can change water from a solid to a liquid and then a gas before drawing a representation of their results in the book. In the *Learn By Doing STEAM Activity Reader Book*, students learn about the plant life cycle during a read-aloud. The teacher stops and asks questions that are found within the story. The instructions include information for the teacher to buy fast-growing seeds so that students can observe the life cycle. Students will apply their knowledge to a tree and draw and label a plant. In the *Teacher Program Guide - Grades K-8 Science*, the chapter on organisms and the environment begins with students naming different parts of plants and animals. Students will be able to describe how different plant structures help the plant function.
- Materials are intentionally sequenced to scaffold learning in a way that allows for deeper understanding. For example, in the *Learn By Doing STEAM Activity Reader Book - Kindergarten Teacher Edition*, Chapter 10, the Mystery Plants unit, scaffolding is happening throughout. At the beginning of the unit, the teacher reads the story and then discusses the Idea Boxes and mind mapping. Then, the activities show the progression of understanding as the students do

hands-on activities and build knowledge of concepts like inherited traits in plants. In the *Teacher Textbook - Kindergarten Science*, prior knowledge is activated; in the Tools unit, the text states that "this standard builds upon experiences and background that students may have had for more common tools."

- Materials also provide scaffolding to differentiate. For example, in the *Learn By Doing STEAM Activity Reader Book - Kindergarten Teacher Edition,* Chapter 10, The Mystery Plants, the information is scaffolded to deepen with complexity through the Idea Boxes. In Idea Box 1, the students mind map the different types of plants that produce seeds. In Idea Box 2, the students mind map how plants resemble their parents. In Idea Box 3, the students are asked what will happen to the seeds that were accidentally blown out of the window in the story. In Idea Box 4, the students discuss the different parts of a plant and then are taken outside to look at plants so they can see the structures of living plants.

Materials clearly and accurately present grade-level-specific core concepts, recurring themes and concepts, and science and engineering practices.

- Materials clearly and accurately present grade-level-specific core concepts. In the *Learn By Doing STEAM Activity Reader Book - Kindergarten Student Edition*, Chapter 2, students learn grade-level specific core content about light, energy, and shadows, as aligned to the TEKS. Also, in Activity 4, Earth's Materials, in the teacher guidance, the teacher is instructed to start asking questions using core concept vocabulary after students are given materials. Background and misconceptions are listed in every chapter to prevent scientific inaccuracies. For example, in the *Teacher Textbook - Kindergarten Science*, students learn that the sun does not go up and down but is stationary and that the earth is rotating.
- Materials clearly and accurately present engineering concepts. In the *STEAM Activity Guide*, examples include students designing and creating their engineering practice projects. In the *Learn By Doing STEAM Activity Reader Book,* Chapter 1, Put Out that Fire, Activities 1 and 5, students use their knowledge of the content to complete the activities. They then move on to Activity 6 and use the engineering design process to build a playground model.
- The materials address the recurring themes clearly and accurately for individual disciplines. The RTC of systems is highlighted repeatedly through the materials with earth and space systems, ecosystems, and systems with respect to force and motion and simple machines. For example, in *Learn By Doing STEAM Activity Reader Book*, Activity 8, students are instructed to discuss the parts of the system, their interdependence on the system function, and how factors might impact the stability and change in the system.

Mastery requirements of the materials are within the boundaries of the main concepts of the grade level.

- Materials provide mastery requirements within the boundaries of the main concepts of what is appropriate for the grade level. At times, materials contain content that is above grade level, in addition to, not instead of content that is at grade level. Materials create inclusive content, and as such provides materials that also cater for below and above level students. For example, in the traditional lesson on Energy, the key words are presented to students after some science reading about light, sound, and heat. When students move into the Focus Questions section, the last question asks students to "Identify the forms of energy from the list below by circling them," and the words friction and weight are listed.

- Materials are within the boundaries of the grade level, including content for advanced learners. For example, the *Learn By Doing STEAM Activity Reader Book* includes a rubric for activities using the scientific method. One of the requirements, according to the rubric, is mastery. The scientific method is outside of the mastery requirements of kindergarten and not included in their current TEKS.

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Indicator 3.2

Materials provide educative components to support teachers' content and knowledge coherence.

1	Materials support teachers in understanding the horizontal and vertical alignment guiding the development of grade-level content, recurring themes and concepts, and scientific and engineering practices.	PM
2	Materials contain explanations and examples of science concepts, including grade-level misconceptions to support the teacher's subject knowledge and recognition of barriers to student conceptual development as outlined in the TEKS.	M
3	Materials explain the intent and purpose of the instructional design of the program.	M

Partial Meets | Score 3/6

The materials partially meet the criteria for this indicator. Materials provide some educative components to support teachers' content and knowledge coherence.

Materials provide some support to teachers in understanding horizontal and vertical alignment guiding the development of grade-level content, recurring themes and concepts, and scientific and engineering practices. Materials contain explanations and examples of science concepts, including grade-level misconceptions to support the teacher's subject knowledge and recognition of barriers to student conceptual development as outlined in the TEKS. Materials explain the intent and purpose of the instructional design of the program.

Evidence includes but is not limited to:

Materials support teachers in understanding the horizontal and vertical alignment guiding the development of grade-level content, recurring themes and concepts, and scientific and engineering practices.

- The introductory materials in the *Teacher Textbook - Kindergarten Science* state, "Science Concepts, scientific practices, and engineering are introduced in this first component," in reference to the *Learn By Doing STEAM Activity Reader Book*. However, neither the *Teacher Textbook - Kindergarten Science* nor the *Learn By Doing STEAM Activity Reader Book* indicates how or when scientific practices or overarching concepts are addressed in each section or within each topic. The inclusion of the Horizontal Alignment Chart, the TEKS 1-5 Content Guides, and pacing guide provide a document that shows when scientific and engineering practices and recurring themes are addressed. This does not support the teacher in understanding how instructional content within the program builds horizontally or vertically.
- The *Teacher Program Guide - Grades K-8 Science* somewhat supports teachers with understanding the vertical and horizontal alignment of the program. It references the use of a storybook "to provide an introduction to in a personally relevant manner." The *Learn By Doing STEAM Activity Reader Book - Kindergarten Teacher Edition* is followed by the activities section. Materials say, "These activities build upon communication, creativity, critical thinking, and collaboration." Materials state, "As students progress through the grade levels, the STEAM storybooks provide opportunities to develop knowledge and skills gradually built through

vertical alignment through the TEKS." The description in the *Teacher Program Guide - Grades K-8 Science* does not fully support teachers, as it does not reference specific learning. In the *Learn By Doing STEAM Activity Reader Book - Kindergarten Teacher Edition*, there are several documents that, when used together, provide specific learning.

- Materials include some guidance that supports teachers in understanding how new learning connects to previous and future learning across grade levels in the Scaffolding Information within the lesson. At the beginning of the Traditional lessons, the Scaffolding Information section provides some information on knowledge students should already have, then lists the TEKS for the previous and future grade levels. Listing the TEKS does not provide enough guidance about connection to future learning. Materials provide minimal guiding documents or information that support teachers in understanding how new learning connects to previous and future learning across grade levels.
- The instructional materials include some guiding documents that support teachers in understanding how new learning connects to previous and future learning across grade levels. For example, the *Learn By Doing STEAM Activity Reader Book - Kindergarten Teacher Edition* includes an Essential Content Guide that describes what science, math, and ELAR concepts are taught in each unit. There is a horizontal and vertical alignment information document in the Online Library for Teacher Support. This provides general information and does not help teachers understand how their specific grade-level content connects to prior or future learning.
- The materials provide some horizontal alignment but little vertical alignment support for teachers to understand the recurring themes and concepts across disciplines as the TEKS require. For example, there are opportunities to consider structure and function as they relate to parts of a plant, but there are no opportunities to make a connection to how they relate to systems such as the Earth, Sun, and Moon. The *Teacher Program Guide - Grades K-8 Science* mentions, "TPS help teachers to facilitate students to make connections between . . . recurring themes and concepts," but there is little evidence in the materials of providing teacher support in understanding these and drawing both horizontal and vertical connections.

Materials contain explanations and examples of science concepts, including grade-level misconceptions to support the teacher's subject knowledge and recognition of barriers to student conceptual development as outlined in the TEKS.

- Materials contain explanations and examples of science concepts for teachers. For example, in the *Teacher Textbook - Kindergarten Science*, The Science section of the lesson is a synopsis of what students have learned and will learn. Background and Preconceptions sections are also in the lessons to help teachers understand before starting the activities. The background information for teachers provides explanations and examples of science concepts. In the *Teacher Textbook - Kindergarten Science*, before each experiment, the materials offer a section titled Background and Misconceptions. In the How Can a Magnet Move Paper Clips? experiment, the materials provide background information about magnets and their forces.
- Materials contain explanations for teachers on grade-level misconceptions to support teachers' subject knowledge. For example, in the *Teacher Textbook - Kindergarten Science*, the Common Misconceptions section helps the teacher "know better." Background and Preconceptions sections are also in the lessons to help teachers understand before starting the activities. The Magnets lesson contains a section titled Common Misconceptions that states, "The word magnetic can confuse. A magnetic material is a material that can be attracted to a magnet. Magnets are magnetic, but not all magnetic materials are magnets."

- Materials guide teachers to recognize barriers to student conceptual development. In the *Teacher Textbook - Kindergarten Science*, Scaffolding describes their expectations for the future in science with the concept.
- The materials provide explanations and examples of science concepts to support the teacher's subject knowledge. For example, the *Teacher Textbook - Kindergarten Science* provides a section titled The Science prior to traditional (TRAD) lessons and a Background and Preconceptions section in the Science Is A Verb (SIAV) lessons. These provide a thorough yet concise explanation of the science contained in the lesson and corresponding activities.

Materials explain the intent and purpose of the instructional design of the program.

- Materials provide a purpose or rationale for the instructional design. The *Teacher Program Guide - Grades K-8 Science* in the Support Notes for Teachers states that the content scaffolds as the characters go alongside the diverse students. The *Teacher Program Guide - Grades K-8 Science*, under the Support Notes for Teachers section, gives information about the rationale of how the program was designed. For example, "The STEAM storybook was designed with two key purposes: first to teach science through the prism of STEAM, science, technology, engineering, and math as an approach more relevant to the lives of students."
- Materials explain the intent of the instructional design of the program. The *Teacher Program Guide - Grades K-8 Science* describes the philosophy of science teaching and learning. They explain the publisher's philosophy that we learn best by doing and the importance of scientific understanding for all students. They also explain the science teacher's role in developing critical thinking, problem-solving, and an appreciation of the scientific process. The *Teacher Program Guide - Grades K-8 Science* describes the Teaching Pedagogy - Storytelling and STEAM. The guide references the research on structure strategies and more information on why teaching science through storytelling is important.
- Materials provide an explanation of the goals of the program. For example, in the *Teacher Program Guide - Grades K-8 Science*, the Philosophy of Science teacher and learning section states, "TPS believes that we learn best by doing. Science is more than memorizing facts. It is a way of organizing and understating the surrounding universe." The section references active learning, STEAM, storytelling, and inquiry as the main strategies of the program to cover required TEKS. For example, the subsection on research-based strategies states, "Recent research about STEAM content and storytelling can be read at the end of this guide. It heavily impacted the design of our program, and the first component of the program uses storytelling as its main strategy." The Program Introduction does not reference goals tied to content knowledge, recurring themes and concepts (RTCs), or science and engineering practices (SEPs).

TPS STEAM into Science Grade K

Indicator 4.1

Materials provide opportunities for students to engage in productive struggle through sensemaking that involves reading, writing, thinking, and acting as scientists and engineers.

1	Materials consistently support students' meaningful sensemaking through reading, writing, thinking, and acting as scientists and engineers.	M
2	Materials provide multiple opportunities for students to engage with grade-level appropriate scientific texts to gather evidence and develop an understanding of concepts.	PM
3	Materials provide multiple opportunities for students to engage in various written and graphic modes of communication to support students in developing and displaying an understanding of scientific concepts.	M
4	Materials support students to act as scientists and engineers who can learn from engaging in phenomena and engineering design processes, make sense of concepts, and productively struggle.	M

Partial Meets | Score 2/4

The materials partially meet the criteria for this indicator. Materials provide some opportunities for students to engage in productive struggle through sensemaking that involves reading, writing, thinking, and acting as scientists and engineers.

Materials consistently support students' meaningful sensemaking through reading, writing, thinking, and acting as scientists and engineers. Materials provide some opportunities for students to engage with grade-level appropriate scientific texts to gather evidence and develop an understanding of concepts. Materials provide multiple opportunities for students to engage in various written and graphic modes of communication to support students in developing and displaying an understanding of scientific concepts. Materials support students to act as scientists and engineers who can learn from engaging in phenomena and engineering design processes, make sense of concepts, and productively struggle.

Evidence includes but is not limited to:

Materials consistently support students' meaningful sensemaking through reading, writing, thinking, and acting as scientists and engineers.

- Materials support students' meaningful sensemaking through reading, thinking, and acting as scientists and engineers. In the *Learn By Doing STEAM Activity Reader Book - Kindergarten Student Edition*, materials provide reading through storytelling, thinking through idea boxes, and acting through design and engineering pieces. There are writing prompts and opportunities for students to describe what they know or have learned. In the *Student Textbook - Kindergarten Science*, there are writing activities. Students have opportunities to read like scientists in the *Learn By Doing STEAM Activity Reader Book - Kindergarten Student Edition*. Additionally, this component includes idea boxes to support the teacher in having students think like scientists and stimulate critical thinking through class discussion of the chapter texts. Following each chapter, activities allow the students to act as scientists or engineers investigating and designing engineering solutions. The activity sections also include opportunities for the students to engage in age-appropriate letter-word analysis, writing, and math. In Chapter 2, Energy, Light and

Shadows, students read and think like scientists and engineers about the topic. In Activity 3 of the same chapter, students think and act like scientists to experiment with the behavior of a light source. In Activity 4, students think and act like engineers to design and create a sunshade. In the *STEAM Activity Guide - Kindergarten Student Edition*, Force, Motion, and Energy, Explore It #1, students work as engineers to create a helicopter and to read and answer questions about the experiment. In Describe It #2, students attach a light to the helicopter to observe how the light changes as it moves closer and farther away from the ground. They also attach a magnet to the helicopter to observe what it can and cannot pick up. Students read, think, and write to answer questions about their experiments.

- Materials provide learning activities that support students' meaningful sensemaking through reading and acting as scientists and engineers. For example, in the *Learn By Doing STEAM Activity Reader Book - Kindergarten Student Edition*, students mind map the roles that light plays in children's everyday lives after hearing a story titled Shadows in the Tent. Next, the teacher explains to the students about scientists, engineers, and physicists. Students then look around the class and explore objects designed by engineers.
- The materials provide teachers with guidance on labs in the Science is a Verb explanation, found in the *Teacher Textbook - Kindergarten Science*, that supports sensemaking. For example, the materials state, "The critical portion of any lab is to have a thorough discussion of the results and student thinking after the experiment is complete. It is suggested you take as much time as the experiment to have this discussion with students. The real learning occurs not from hands-on experiments, but from a deep discussion of the experiment while making connections to the concept they are learning." The guidance supports sensemaking by taking the lesson beyond a hands-on investigation and building conceptual knowledge through discussion.

Materials provide multiple opportunities for students to engage with grade-level appropriate scientific texts to gather evidence and develop an understanding of concepts.

- The materials sometimes provide grade-level appropriate text but sometimes do not. For example, in the traditional lesson on Energy, the keywords are presented to students after some science reading about light, sound, and heat. None of these include the words *friction* or *weight*, which are not grade-level appropriate words, and when students move into the Focus Questions section, the last question asks students to “Identify the forms of energy from the list below by circling them,” and the words *friction* and *weight* are listed. This is not a grade-level appropriate scientific text, as *friction* is not introduced in the TEKS until grade 4.
- Additionally, in the *Learn By Doing STEAM Activity Reader Book - Kindergarten Student Edition*, Chapter 2, Activity 5: Sound Energy, the reading instructs the teacher to “explain that vibration is a tiny movement and that sound moves as vibrations in the air.” This text is inappropriate for the grade level since students at that developmental level are very concrete learners, and waves cannot be easily seen and observed. The TEKS states that vibrations in relation to sound energy are not introduced until grade 2, with TEKS 2.8A, so introducing this into kindergarten texts for core instruction is not grade-level appropriate.
- While the materials provide many opportunities to engage with grade-level appropriate texts, sometimes they do not. For example, in the *Learn By Doing STEAM Activity Reader Book - Kindergarten Student Edition*, Chapter 2, Activity 8: Vocabulary Words, students are given words to spell, sound out, etc. One of the words used is *electricity*. This word is not introduced in the previous activities, and electrical energy is not introduced until grade 4. The TEKS states that “students focus on demonstrating light energy sources” rather than exploring energy

transformations. Exposing pre-readers to tangential vocabulary to the TEKS laid out for the grade level can impair students' ability to develop a solid understanding of scientific concepts.

- The scientific text provided to students is sometimes not grade-level appropriate, impairing students' ability to gather evidence and develop an understanding of a concept. In the student text, Earth's Resources section, the text discusses resources and natural resources. This text is not grade-level appropriate, as the terms resource and natural resources do not appear in the TEKS until grade 1.

Materials provide multiple opportunities for students to engage in various written and graphic modes of communication to support students in developing and displaying an understanding of scientific concepts.

- Materials provide multiple opportunities for students to engage in various modes of communication to display understanding. For example, in the *Student Textbook - Kindergarten Science* Light unit, after listening to a story read by the teacher about fireflies, they think and discuss other objects that make their light, then relate it to the classroom. They are then asked to draw a picture of an object in the classroom.
- Materials provide many opportunities for displaying understanding. The *Learn By Doing STEAM Activity Reader Book - Kindergarten Student Edition* contains fill-in-the-blanks, open-ended questions, drawing observations and ideas, and graphs for data. There are opportunities throughout the Spot the Funny Weather Dog unit about weather. In the *STEAM Activity Guide - Kindergarten Student Edition*, students fill in the blanks, have short answers, match, fill in tables, and graphic organizers.
- Materials provide multiple opportunities for students to communicate thinking on scientific concepts in written and graphic modes. The *Student Textbook - Kindergarten Science* provides the Project Based Lesson, students record their observations in written form and by drawing. In the investigation called Looking at the Sky, students draw what they see in the day and night skies. Students draw a picture of the sun, moon, a cloud, and a star, then write to answer questions.
- Materials provide multiple opportunities for students to engage in various written and graphic modes of communication to support students in developing and displaying an understanding of scientific concepts. In the *Student Textbook - Kindergarten Science*, students will write down what happens as they find out what happens when two magnets are placed close to each other. In the *Student Textbook - Kindergarten Science*, the class will create a simple graph displaying the last week's weather. In the How do You Group Objects unit found in the *Student Textbook - Kindergarten Science*, students use graphic organizers to classify objects. In the Properties unit, students draw pictures to compare items.
- Materials provide multiple opportunities for students to engage in various written and graphic modes. Materials support students to act as scientists and engineers who can learn from engaging in phenomena and engineering design processes, make sense of concepts, and productively struggle.

Materials support students to act as scientists and engineers who can learn from engaging in phenomena and engineering design processes, make sense of concepts, and productively struggle.

- Materials support students to act as scientists and engineers who can learn from engaging in phenomena and engineering design processes, make sense of concepts, and productively

struggle. In the *STEAM Activity Guide - Kindergarten Teacher Edition*, under the Vignette Day 4, students plan an investigation around, "Do we need lights to see?" In the Underground Gardening project, students first experience sprouting plants. They then conduct an experiment to determine how water flows through various types of soil. Students then apply this knowledge as they select soil for their flower pot to place their sprouts in. Students then observe and compare the plant's growth to the parent plant. Last, they put the class plants together and looked for organisms that had taken up residence in the plants. The materials in the *STEAM Activity Guide - Kindergarten Student Edition* support students to act as scientists and engineers in the Scientific and Engineering Practice Project section. They decide on a problem and follow the steps to design, explain, and productively struggle through the testing of the design.

- Materials support students to act as scientists and engineers who can learn from engaging in phenomena and engineering design processes, make sense of concepts, and productively struggle. In the *Teacher Textbook - Kindergarten Science*, students make a thumb pot and are provided a list of success criteria. The teacher will have the students think about the strengths and limitations of their model. Students are asked to define any problem they may have, such as water leaks.

TPS STEAM into Science Grade K

Indicator 5.1

Materials promote students' use of evidence to develop, communicate, and evaluate explanations and solutions.

1	Materials prompt students to use evidence to support their hypotheses and claims.	M
2	Materials include embedded opportunities to develop and utilize scientific vocabulary in context.	M
3	Materials integrate argumentation and discourse throughout to support students' development of content knowledge and skills as appropriate for the concept and grade level.	PM
4	Materials provide opportunities for students to construct and present developmentally appropriate written and verbal arguments that justify explanations to phenomena and/or solutions to problems using evidence acquired from learning experiences.	PM

Partial Meets| Score 2/4

The materials partially meet the criteria for this indicator. Materials prompt students to use evidence to support their hypotheses and claims. Materials partially promote students' use of evidence to develop, communicate, and evaluate explanations and solutions.

Materials include embedded opportunities to develop and utilize scientific vocabulary in context. Materials integrate some argumentation and discourse throughout to support students' development of content knowledge and skills as appropriate for the concept and grade level. Materials provide some opportunities for students to construct and present developmentally appropriate written and verbal arguments that justify explanations of phenomena and/or solutions to problems using evidence acquired from learning experiences.

Evidence includes but is not limited to:

Materials prompt students to use evidence to support their hypotheses and claims.

- The materials outline the DAPIC - define, assess, plan, implement, and communicate - process in the *Teacher Program Guide - Grades K-8 Science*. The DAPIC presents a scaffold to help students use evidence to support claims. Teacher guidance in the Program Guide indicates that materials intend for teachers to use the DAPIC in practical investigations for students to communicate claims and solutions based on evidence.
- Materials include prompts for students to use evidence when supporting their hypotheses and claims. In the Earth and Space lesson, students catch air in a bag. Step 6, in the teacher's directions, states, "Ask students how they can provide evidence to show that air is all around us."
- Materials provide opportunities for students to develop how to use evidence. In the How Do You Group Objects Mini Experiment 1, students feel the weights of objects, sort them into heavy and light, and record this on a table. The student-facing instructions state, "In the table below, write down the weight of each object. This is evidence."
- In the *Learn By Doing STEAM Activity Reader Book - Grade K Teacher Edition,* Scientific Method section, there is guidance on teaching what a hypothesis is, and the teacher gives examples,

including "I predict that ants will move towards sugar because I saw ants on the ice cream I left outside."

- Materials provide opportunities for students to use hypotheses. For example, students use hypotheses in the *Learn By Doing STEAM Activity Reader Book - Grade K Student Edition*, Chapter 2, Activity 3. Students predict what might happen when they point a flashlight at different objects. Students plan and test their predictions, draw their results, and explain why some materials worked and some did not. At the end of the lesson, the students are reminded to listen for evidence.

Materials include embedded opportunities to develop and utilize scientific vocabulary in context.

- Materials include embedded opportunities to develop, utilize, and apply scientific vocabulary in context. In the *Learn By Doing STEAM Activity Reader Book - Grade K Student Edition*, students read chapters about science content with embedded scientific vocabulary that is bolded. Students then apply the vocabulary to some of the activities following each chapter. In Chapter 3, students read about force and motion. The embedded vocabulary words include *energy, work, move, change shape,* and *force*. In Activity 1, students use vocabulary words to observe how different objects roll down a ramp and discuss the results. An activity section is at the end of each chapter in the *Learn By Doing STEAM Activity Reader Book - Grade K Student Edition*. This section includes word work activities with science vocabulary. Students complete an activity to pronounce the words in syllables, sort by initial sound, sound out the words, and match the words to a picture. The last activity is a vocabulary review. The words are listed in a table, and bulleted suggestions for practice are listed. Some suggestions include "Spell out the words" and "Ask the children what the words mean and demonstrate with an action or an example."
- Students develop and utilize scientific vocabulary in context in the *Teacher Textbook - Grade K Science*, Tools chapter. Teachers show glossary pictures of different tools, and students name the ones they know. The teacher displays the images on a Word Wall and adds the tool's name with a sentence describing how to use the tool. The materials state that the teacher should ask students to name and describe tools from the wall daily.
- In the Force, Motion, and Energy chapter in the *Teacher Textbook - Grade K Science*, materials include a section titled Support, directing teachers to "reinforce the vocabulary. Remind students that if a magnet does attract material, it is magnetic. Have students practice using new vocabulary. Students should use the correct vocabulary when answering questions or during discussions."
- Materials provide defined vocabulary lists. The *Teacher Textbook - Grade K Science* has a section labeled Key Words. These vocabulary words for the unit are listed with the definition beside each word.

Materials integrate argumentation and discourse throughout to support students' development of content knowledge and skills as appropriate for the concept and grade level.

- Materials provide some opportunities for students to engage in discourse. In the *Teacher Textbook - Grade K Science*, in the Earth and Space chapter, Project-Based Lesson, the Summary portion guides the teacher to "Place students into pairs, and ask them to engage respectfully in scientific argumentation. Provide students with the data and information they need to support their argument." However, there is no structure provided to the teacher or student as to how to engage in scientific argumentation

- Scientific argumentation is explained in the Project-Based Learning (PBL) section of the *Learn By Doing STEAM Activity Reader Book - Grade K Teacher Edition*; scientific argumentation is referenced in the Vignette. Students are instructed to "Construct an argument"; however, the guidance does not support grade-appropriate development and is not integrated throughout the materials.
- Materials integrate some discourse references. The *Learn By Doing STEAM Activity Reader Book - Grade K Student Edition* contains some opportunities for students to engage in discourse. In the Force, Motion, and Energy Word Wall Activity, students must use what they learned in the day's lesson to communicate the information to other scientists and the public. Students may write a newspaper article, create an educational video, or deliver a presentation. Guidance is provided to consider the audience when making the presentation.
- The *Teacher Textbook - Grade K Science* integrates discourse and argumentation within some lessons. For example, in the engineering Project-Based Lesson, students prepare for their classmates to disagree with their solution. The text states, "Each group will share their designs and test results, and the best solution for the problem will be agreed upon as a class. To support the decision, the class creates a list of strengths and weaknesses of each group's design and highlights why the winning design is best." In another lesson in Chapter 2, Activity 3, during the conclusion portion, the teacher asks the students which object would make good window material. Students are asked to "actively listen" without opportunity or guidance for argumentation and discourse.
- The materials sometimes support discourse; however, there is minimal guidance for students to develop their arguments. In the *Student Textbook - Grade K Science*, there were only a handful of mentions of students discussing with peers and no mentions of creating an argument or practicing argumentation skills. While discourse occurs several times, it is not integrated throughout the materials.

Materials provide opportunities for students to construct and present developmentally appropriate written and verbal arguments that justify explanations to phenomena and/or solutions to problems using evidence acquired from learning experiences.

- Materials provide some opportunities for students to justify explaining phenomena and solutions to problems in verbal formats. In the *Learn By Doing STEAM Activity Reader Book - Grade K Teacher Edition*, Chapter 2, Activity 3, students observe the behavior of a light source. The Discussion of Results section states, "Ask the students to use their words to explain why some materials let light pass through and others do not." Students are not prompted to construct an argument to justify their explanation using evidence.
- Materials provide some opportunities for students to construct and present developmentally appropriate written and verbal responses but do not prompt students to utilize evidence to construct arguments. In the *Teacher Textbook - Grade K Science*, Project-Based Lesson, students construct and present explanations of phenomena. For example, as a class, the students discuss failure points from the data gathered. The materials suggest that the class can write a newspaper article, create an educational video, or deliver a presentation with their results. While this activity allows choice, there is no information about constructing their written or verbal arguments nor a reminder to justify their explanations using evidence.
- The materials provide some opportunities for written and verbal communication, but there is a lack of support for developing an argument or using evidence to support an argument. For example, in the STEM lesson, Underground Gardening, in the *STEAM Activity Guide - Kindergarten Teacher Edition,* students are asked to write about a claim based on their

investigation of growing seeds in a transparent pot. The materials ask students, “What do you think will start living in your plants? Why?” The materials rarely prompt students to use evidence from their investigation to develop an argument to justify their explanation. There are no supports within the lessons for developing an argument, either as a class or as an individual.

TPS STEAM into Science Grade K

Indicator 5.2

Materials provide teacher guidance to support student reasoning and communication skills.

1	Materials provide teacher guidance on anticipating student responses and the use of questioning to deepen student thinking.	M
2	Materials include teacher guidance on how to scaffold and support students' development and use of scientific vocabulary in context.	M
3	Materials provide teacher guidance on preparing for student discourse and supporting students in using evidence to construct written and verbal claims.	M
4	Materials support and guide teachers in facilitating the sharing of students' thinking and finding solutions.	M

Meets | Score 4/4

The materials meet the criteria for this indicator. Materials include some guidance to support student reasoning and communication skills.

Materials provide teacher guidance on anticipating student responses and the use of questioning to deepen student thinking. Materials include teacher guidance on how to scaffold and support students' development and use of scientific vocabulary in context. Materials provide teacher guidance on preparing for student discourse and supporting students in using evidence to construct written and verbal claims. Materials support and guide teachers in facilitating the sharing of students' thinking and finding solutions.

Evidence includes but is not limited to:

Materials provide teacher guidance on anticipating student responses and the use of questioning to deepen student thinking.

- Materials provide teacher responses to possible students' responses. The materials divide teacher guidance into correct student responses, incorrect student responses, and partially correct student responses. The *Teacher Program Guide - Grades K-8 Science* recommends that students responding correctly be provided with Level 2 assessment questions from the Online Library - Assessment tools for the TEKS being taught and affirm comprehension. The guide recommends that students responding incorrectly be provided with Level 1 assessment questions. The materials state, "A student responds incorrectly - use the Online Library - Assessment tools; choose Level 1 assessment questions for the TEKS being taught…. Determine if there is a misconception and resolve."
- Materials provide teacher guidance on questioning to deepen student thinking. For example, in the *Learn By Doing STEAM Activity Reader Book - Kindergarten Teacher Edition*, the teacher is prompted to take students on a school tour and identify living and non-living things. The teacher is guided to ask if students can describe why each thing is living or nonliving. Then ask, "Does it breathe? Does it move?" In Chapter 1, idea box 4, materials direct teachers to "ask the children what questions they have about objects in the natural world?" In idea box 6, teachers "ask them what buildings are made of?"

TPS STEAM into Science Grade K

Materials include teacher guidance on how to scaffold and support students' development and use of scientific vocabulary in context.

- Materials includes teacher guidance on how to scaffold understanding of scientific vocabulary. The *Learn By Doing STEAM Activity Reader Book - Kindergarten Teacher Edition* provides embedded support for introducing students' development of scientific vocabulary in context. In Chapter 7, vocabulary words such as *weather*, *wind*, *spring*, and *season* are first presented in the chapter story text, and some of the words are reinforced in idea boxes that guide teachers in class discussions with the students and activities. Materials provide a review in the vocabulary section in the last activity of the chapter.
- The *Learn By Doing STEAM Activity Reader Book* includes guidance for routine and general strategies, such as reviewing vocabulary words by spelling them out, asking for a definition, acting out the word, and reading and sounding them out.
- Materials include teacher resources on learning vocabulary words, but no specific guidance is provided on supporting students' development of scientific vocabulary in context. Materials include a list of Key Words in the *Teacher Textbook - Kindergarten Science*. The Key Words list vocabulary words and definitions that will be used in the chapter. According to the chapter, Traditional Lesson Plans, the vocabulary pages are included in the Blackline Masters and are encouraged to be sent home for students to study.
- Materials include teacher guidance on students' use of scientific vocabulary in context. For example, in the *Teacher Textbook - Kindergarten Science* in the Force, Motion, and Energy chapter, a Support Section states, "Reinforce the vocabulary. Remind students that if a magnet does attract a material, it is magnetic; if a magnet does not, that material is not magnetic. Have students practice the vocabulary. Students should use the correct vocabulary when answering questions or during discussions."

Materials provide teacher guidance on preparing for student discourse and supporting students in using evidence to construct written and verbal claims.

- Materials provide teacher guidance on preparing for student discourse. In the *Learn By Doing STEAM Activity Reader Book - Kindergarten Teacher Edition*, Chapter 1, the materials guide teachers on the importance of communicating the solution in the design engineering process. "During the sharing phase, encourage the children to actively listen to other children and participate respectively during discussions." Students will complete an activity in the *STEAM Activity Guide - Kindergarten Student Edition*, Force over Motion and Energy chapter. The students are to draw a model to support a statement. Next, students discuss their drawings in small groups and create a list of facts that they agree upon. In the weather chapter in Activity 7 of the *Learn By Doing STEAM Activity Reader Book - Kindergarten Student Edition*, students discuss their results. The *Learn By Doing STEAM Activity Reader Book - Kindergarten Teacher Edition* states, "Remind them to listen actively to others' explanations to identify important evidence and engage respectfully in scientific discussion."
- Guidance is also evidenced for STEM projects appearing in the program within the information in the teacher program guide stating 'This approach is referred to by the acronym "DAPIC" - Define, Assess, Plan, Implement, and Communicate. Likewise, communication may be necessary at any stage of the problem-solving process. The DAPIC model allows for all of these variations.
- Materials provide teacher support in preparing students to engage in discourse. For example, the Scientific Method and Design engineering process section contains multiple guidance

comments regarding discussions. The Comprehension Skills sections contain guidance on discussion and argumentation. For example, idea boxes are cited throughout the text as points of collaborative discussion, engaging the children in the topic. The idea boxes are designed to promote questions from the text they have listened to, provide opportunities to evaluate details, and synthesize and share predictions and inferences This allows a child to modify their understanding of the text read, discuss topics, and determine the basic theme using text evidence.

- Materials guide teachers in supporting students in using evidence to construct written claims. For example, *Teacher Textbook - Kindergarten Science* states '"What equipment can you use to accurately weigh each object? In the table below write down the weight of each object". Also, the teacher textbook states "Make observations to construct an evidence-based account that objects can be seen only when illuminated". The *Teacher Program Guide - Grades K-8 Science* contains instructions on the DAPIC process. This explains to teachers how to effectively use questioning to define, assess, plan, implement and communicate during a lesson.
- In the *Learn By Doing STEAM Activity Reader Book - Kindergarten Teacher Edition*, materials provide general guidance on preparing for student discourse and supporting students in using evidence to construct claims. Materials state that students should write about their experiments and include "the analysis of their results. Plan to discuss the results as a class and focus on key areas such as what their results indicate or mean and differences between different student experiments. What conclusions can be drawn?"
- The *Teacher Textbook - Kindergarten Science* includes investigations. Materials include teacher guidance to have students use evidence to support their claims. For example, teachers are asked to have students "Plan and carry out tests: Sketch a model of your idea. What materials can you use? Plan your tests: a. How will you test whether your idea works? b. What will be your measures, or evidence, of success? c. Under what conditions do your ideas need to be tested? d. What controls do you need so that you are testing only one variable at a time? e. How many times should you repeat each test? f. Collect data from your tests. Use this as evidence for discussion with your teacher and classmates. Remember that discussion should be respectful. They can disagree with your opinions".

Materials support and guide teachers in facilitating the sharing of students' thinking and finding solutions.

- Materials provide support and guidance in facilitating the sharing of students' thinking. In the *Teacher Textbook - Kindergarten Science*, the PBL summary sections have think-pair-share opportunities for students to share their thinking and questions. In the *Learn By Doing STEAM Activity Reader Book - Kindergarten Teacher Edition*, the materials support and guide the teachers in facilitating the sharing of thinking and solutions in the activities throughout the chapters by asking the students to share their results with the class and engage in scientific discussions. For example, in Chapter 7, Activity 7, students explore the air around them. The Discussion of The Results section has students share results and states, "Ask the children to share their results with the class, showing how their ribbons behaved in the wind and what was demonstrated. Remind them to listen actively to others." Students critique each other's work in the chapter on Earth and Space in the *Learn By Doing STEAM Activity Reader Book - Kindergarten Student Edition*.
- Materials provide teacher guidance to engage students' thinking in various modes of communication throughout the year. For example, Specific guidance is provided about communication in the *Teacher Textbook - Kindergarten Science*. It states "Effective science

communication is central to education, discussion and scientific argumentation. Not all scientists agree on everything, and when they disagree it is important that they can effectively use data, and current scientific ideas to communicate their reasons for their disagreements. Sometimes scientists must communicate complex ideas to the public. Most members of the public have a lower scientific understanding than a professional scientist, and therefore when communicating with the public it is important to deliver information in a way that can be easily understood. Encourage students to think about what they have learned in today's lesson and discuss the different ways in which they could communicate what they have learned. You might instruct the class to write a newspaper article, create an educational video, or deliver a presentation. Discuss with students the importance of considering their audience when constructing their presentation. Students may create presentations to deliver to the teacher, each other or their parents/carers. Presentations may be delivered individually or collaboratively". Misconceptions are also provided.

- Materials provide support and guidance for teachers in facilitating the sharing of students' finding solutions. The *Learn By Doing STEAM Activity Reader Book - Kindergarten Teacher Edition* provides teacher guidance on facilitating students finding solutions. In Chapter 5, idea box 3, the text states, "Discuss with your children how they might conserve by reducing use, reusing and recycling natural resources and materials from their classroom. Through demonstration and practice with The children, work with them to conserve natural resources and other materials." In the Assessment Guide, Investigation, and Reasoning, students discuss in small groups. Students consider a problem outlined on the Investigation page, and they discuss their answers and come to an agreement. Students present their analysis to the class. During the discussion portion of the lesson, students critique others' work. The materials guide the teachers to offer two starts (positive feedback) and a wish (improvement).

TPS STEAM into Science Grade K

Indicator 6.1

Materials include a variety of TEKS-aligned and developmentally appropriate assessment tools.

1	Materials include a range of diagnostic, formative, and summative assessments to assess student learning in a variety of formats.	M
2	Materials assess all student expectations over the breadth of the course and indicate which student expectations are being assessed in each assessment.	M
3	Materials include assessments that integrate scientific concepts and science and engineering practices with recurring themes and concepts.	M
4	Materials include assessments that require students to apply knowledge and skills to novel contexts.	M

Meets | Score 2/2

The materials meet the criteria for this indicator. Materials provide a variety of TEKS-aligned and developmentally appropriate assessment tools.

Materials include a range of diagnostic, formative, and summative assessments that include formal and informal opportunities to assess student learning in a variety of formats. Materials assess all student expectations and indicate which student expectations are assessed. Materials include assessments that integrate scientific concepts and science and engineering practices with recurring themes and concepts. Materials include assessments that require students to apply knowledge and skills to novel contexts.

Evidence includes but is not limited to:

Materials include a range of diagnostic, formative, and summative assessments to assess student learning in a variety of formats.

- The materials provide multiple assessments in the *Assessment Guide - Grade K Teacher Edition*. This booklet contains traditional assessments and project-based assessments for TEKS covering the following concepts: scientific and engineering practices; force, motion, and energy; Earth and space; organisms and environments. For example, within the study of organisms and environments, the *Assessment Guide* contains nine designated assessment activities (i.e., formative and summative) that include both traditional test questions and project-style application tasks. The Earth and Space chapter in the *Assessment Guide - Kindergarten Teacher Edition* includes assessments such as multiple-choice, open-ended questions, and a performance task with a rubric. For example, in the Scientific Investigation and Reasoning 3 chapter, Open Questions, students are asked to explain why cars have headlamps and rear lights.
- Each chapter in the *Student Textbook - Kindergarten Science* includes a What Have You Learned section and a Test Yourself section. Chapter 1, What Have You Learned, shows six objects. It states, "Write a sentence about each of these objects. Which of these objects are durable?" The Test Yourself section includes four two-choice questions and two open-ended questions. Students can also answer focus questions in the *Student Textbook - Kindergarten Science* to show their learning.

- Materials provide diagnostic, formative, and summative assessment tools. The *Teacher Program Guide - Grades K-8 Science* contains a section called Support Notes for Teachers. Within the Support Notes for Teachers segment are frequently asked questions with answers. Question 4 in this document asks, “Where are the TPS diagnostic, formative, and summative assessment tools?” The responses state that for the Diagnostic assessments, “The interactive software tool provides automated grading for multiple choice questions; Benchmark tests (Level 1, 2 and 3 Assessments) in Online Library - Blackline Master.”
- The *Teacher Program Guide - Grades K-8 Science* has a Progress Monitoring section that provides information on the four Benchmark tests included in the program. Materials direct teachers to use the Benchmark 1 test to assess prior knowledge and then use the Benchmark 2 test to assess mastery of taught TEKS. Benchmark 3 test can be administered as an end-of-term test, and Benchmark 4 is the end-of-year test. In this respect, Benchmark tests 1, 2, and 3 can be considered diagnostic and formative assessments, and Benchmark 4 can be considered a summative assessment. Materials provide formative and summative assessments in the Interactive Software Tool and Assessment Generator.
- Materials include a range of embedded assessment activities in the teacher resources. In the *Teacher Textbook - Kindergarten Science*, the materials state, "These reader books [*Learn By Doing STEAM Activity Reader Book*] include expository text, hands-on activities, and assessment tasks." The *Teacher Textbook - Kindergarten Science* provides steps for formative assessments in the additional Hints sections of the Parts of a Plant unit to evaluate what students remember from memory and what they know and don't know about the parts of a plant. For example, the Procedures say, "Draw and color a flowering plant from your memory."

Materials assess all student expectations over the breadth of the course and indicate which student expectations are being assessed in each assessment.

- The *Assessment Guide* clearly labels each activity with the portion of the TEKS assessed. For example, one performance task for force, motion, and energy lists the TEKS K.1.A - Scientific and engineering practices (ask questions and define problems) and K.7.A Force, motion, and energy (magnets; push or pull). The performance task has a skills assessment in which students investigate to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object. Following the project, open-ended and multiple-choice questions assess student learning and mastery of the identified TEKS. The TEKS addressed and taught in that section or chapter are at the top in the *Assessment Guide*. It allows for quick reference and guidance for the teachers and students. For example, the Science Assessment Questions Open-ended Questions refer to the scientific and engineering practices TEKS listed at the top of the page.
- Materials indicate which TEKS are assessed across the breadth of the course. In the *Teacher Program Guide - Grades K-8 Science*, the materials within the Progress Monitoring information describe the Focus Questions, Performance Tasks with Rubrics, TEKS by Chapter assessment questions, and Assessment Generator. Under Performance Tasks with Rubrics, the materials state, "For each TEKS, a performance task with a rubric is provided. Grade students and enter results onto the report card." The By TEKS, Chapter assessment questions at the end of each chapter, and the materials note, "The major assessment tools are those in the Online Library - Assessment tools." Under Assessment Generator, the materials say, "Teachers can create, save, and print assessments to include chosen TEKS and skill levels. The tests can be personalized by the student or by class. Manual grading is required."

- Materials indicate which expectations are being assessed in each assessment. The Assessment Generator is categorized by grade level, question type, learner level, and TEKS, enabling the teacher to evaluate all student expectations. The online Assessment Generator can create assessments for any grade-level standard. Materials include TEKS-aligned assessments that align the curriculum standards and student expectations to measure student understanding and mastery of the concepts and skills taught in the materials. The *Assessment Guide - Kindergarten Teacher Edition*, Science Investigation and Reasoning 3, the TEKS are listed at the top of the page and align to the Open Questions. The question, "Name two different sources of light," aligns with the TEK K.1 and K.8 listed at the top of the page.
- Materials provide resources to assess student expectations across the breadth of the course. In the *Student* and *Teacher Textbook - Kindergarten Science*, the materials indicate which student expectations are assessed by having the standard above each page. Teachers can find Standard 1(D) in the Tools chapter at the top of each assessment page. The Learn By Doing Assessment Rubric shows where to find each standard assessment to demonstrate that all student expectations are covered.

Materials include assessments that integrate scientific concepts and science and engineering practices with recurring themes and concepts.

- The *Teacher Textbook - Kindergarten Science*'s Project-Based Learning section contains assessments integrating scientific concepts with science and engineering practices. For example, the weather PBL for kindergarten has a performance assessment where students observe and describe weather patterns over a month. They track data using a chart, read a thermometer, make predictions, and a math extension and at-home discussion.
- The *Assessment Guide* contains activities integrating scientific concepts and science and engineering practices with recurring themes and concepts. For example, in the Force, Motion, and Energy Skills Assessment, students are to plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object and answer open-ended questions. The assessments in these materials integrate scientific and engineering concepts and practices within the themes of the TEKS. For example, the assessments integrate, include, and assess scientific and engineering practices within the first TEKS band. The front matter of the *Assessment Guide - Kindergarten Teacher Edition* organizes this content for all grade levels under the headings: Questions and Answers (K.1.A), Solving Problems (K.1.B), Working Safely and Responsibility (K.1.C), and Using Tools (K.1.D). Under each heading, some segments include the program objective and scaffolding information for each grade level. For example, under the heading Solving Problems in the kindergarten materials, the objective reads, "Students will be able to identify and explain a problem and make predictions based on observable patterns in nature. they will learn that scientists investigate different things in the natural world and use tools to help in their investigations."
- Materials include assessments that integrate scientific concepts and science and engineering practices. In the *Learn By Doing STEAM Activity Reader Book - Kindergarten Teacher Edition*, Chapter Assessments, "Ask the student to demonstrate, using objects they have selected from the classroom, how light from a flashlight travels through some objects and is blocked by others." The question covers TEKS 8(B). In the *Learn By Doing STEAM Activity Reader Book*, Chapter 2, Activity 4, Sunshade, students design a sunshade for a dog using the design engineering process. The rubric for assessment is found in the Learn By Doing Assessment Rubric Grade K. In Chapter 7, students act like scientists to observe, measure, and record the weather. The assessment item for the same standard shows a clipart flag and cartoon children

flying a kite. It states, “Question: Ask the students to describe what is happening with the air in the following pictures.”

- The materials include a Learn By Doing Assessment Rubric. The resource lists the standards, where taught, a specific assessment question, a general assessment question, and a rubric to score students' answers. For 5.B, the specific question is, "After reading chapters 3 & 4, ask the students to predict a cause and effect with a push or pull force." The general question is, "Students are able to investigate predicted cause and effect relationships."

Materials include assessments that require students to apply knowledge and skills to novel contexts.

- The materials include assessments that require students to apply knowledge and skills to novel contexts. Specifically, the assessments within the program's *Assessment Guides* are activities separate from the lessons in the other program materials. This structure allows for assessment within the topic of study but in a new context, such as during the study of push and pull with magnets. Then, the *Assessment Guide* provides a performance task skills assessment that requires students to apply knowledge and skills about magnets and push and pull in a performance task skills assessment, which includes a rubric for scoring and summative questions.
- In the *Assessment Guide,* Science Assessment Questions section under the Performance Task Prompt, the "students will think about the ways in which humans can make life better for other animals and plants by providing places, or environments, which have all the things they need to grow, survive and reproduce." Students will produce a plan for a wildlife garden at school. This task applies knowledge and skills to novel contexts after students learn about how plants and animals depend on the environment to meet their basic needs for survival.
- Material includes assessments that require students to apply knowledge and skills to novel contexts. In the Performance Task, Earth and Space chapter of the *Assessment Guide - Kindergarten Teacher Edition*, students look for patterns in weather with the chart they recorded weather observations on. Students will describe the patterns in weather they notice. Materials ask, “Did you notice any patterns in the weather over the time that you made your observations? Describe the patterns you noticed.” Next, students spend one week charting weather, temperature, and rainfall in the morning and afternoon independently. Students should be able to construct an accurate weather chart and summarize the week’s weather correctly.

TPS STEAM into Science Grade K

Indicator 6.2

Materials include guidance that explains how to analyze and respond to data from assessment tools.

1	Materials include information and/or resources that provide guidance for evaluating student responses.	M
2	Materials support teachers' analysis of assessment data with guidance and direction to respond to individual students' needs, in all areas of science, based on measures of student progress appropriate for the developmental level.	PM
3	Assessment tools yield relevant information for teachers to use when planning instruction, intervention, and extension.	M
4	Materials provide a variety of resources and teacher guidance on how to leverage different activities to respond to student data.	PM

Partial Meets | Score 1/2

The materials partially meet the criteria for this indicator. Materials include some guidance that explains how to analyze and respond to data from assessment tools.

Materials provide information and/or resources that provide guidance for evaluating student responses. Materials partially support teachers' analysis of assessment data with guidance and direction to respond to individual students' needs, in all areas of science, based on measures of student progress appropriate for the developmental level. Assessment tools yield relevant information for teachers to use when planning instruction, intervention, and extension. Materials provide some resources and teacher guidance on how to leverage different activities to respond to student data.

Evidence includes but is not limited to:

Materials include information and/or resources that provide guidance for evaluating student responses.

- Materials provide information and/or resources for evaluating student responses in most program components. This information generally appears in red font in teacher-facing resources.
- The *Learn By Doing STEAM Activity Reader Book - Kindergarten Teacher Edition* contains sample student responses to questions investigated during a culminating activity for each TEKS content under the Assessment section. This component also includes the Learn by Doing Assessment Rubric - Kindergarten as a resource for evaluating student responses. Materials include an assessment question followed by sample responses that determine mastery. For example, "Ask the students to describe the safe practices in your class verbally." According to the rubric for mastery, students must be able to verbally describe all of the safe practices without prompting. In Chapter 3, Activity 1, students conduct a simple science investigation to understand how objects with different shapes move. The teacher instructs the students to draw their hypotheses in a notebook. According to the Learn by Doing Rubric, teachers will assess the students on a four-point rubric. To receive a score of four, "students can verbally describe observations fully and follow instructions to collect evidence."
- The *Teacher Textbook - Kindergarten Science* offers guidance for evaluating student responses in red text for every student activity/question. For example, a formative assessment asks students,

"What happens when you bring two magnets close to each other?" Materials include a suggested answer for the teacher stating that they either move away from or toward each other.

- The *Assessment Guide - Kindergarten Teacher Edition* includes a Science Assessment Questions section with a scoring rubric that helps teachers evaluate students' responses to the performance task prompt. For instance, in one of the prompts, "Explain what your design was supposed to do," the rubric assigns a score of 0-4 points for this prompt. In another example, students create a chart to record the weather. The assessment includes a scoring rubric that describes the quality of answers that would score 0-4. A four-point answer requires the following: "Students have constructed an accurate weather chart throughout the week and can summarize the week's weather correctly. They answer all the questions with appropriate weather language and add extra information such as their location in the US or even the world and the year's season." For a score of 4, the rubric does not guide the teacher on how to evaluate the student's responses. It does not guide the teachers as to what an "accurate weather chart" would look like. Operationally defining where this occurs is the type of guidance teachers need to evaluate student responses accurately and consistently.

Materials support teachers' analysis of assessment data with guidance and direction to respond to individual students' needs, in all areas of science, based on measures of student progress appropriate for the developmental level.

- Materials support teachers' analysis of assessment data but lack guidance and direction for responding to individual students' needs based on that analysis.
    - For example, while the Graded Assessment Database offers three levels (Below, At, and Above) to determine measures of student progress, materials lack teacher guidance and direction for using this assessment data to respond to students' needs.
    - The materials include an Assessment Matrix that lists the knowledge statements for core concepts to support tracking overall data for students but lack accompanying teacher guidance for utilizing data in the matrix to drive instruction.
    - The materials contain Intervention Focus Tutorial materials to assist students who are not meeting expectations, but this tool is not directly aligned with assessment data. Materials lack teacher guidance and direction for teachers to use the Intervention Focus Tutorial in response to their analysis of assessment data.
    - The *Assessment Guide - Kindergarten Teacher Edition* offers a range of tools for evaluation and questioning, including multiple-choice and open-ended questions and performance tasks. However, it lacks support materials or resources to help teachers easily analyze and interpret the data they collect.
- Materials lack specific guidance documents and resources to support teachers' analysis of assessment data. The *Teacher Program Guide - Grades K-8 Science* provides a series of actions to take in response to student data that is limited to assigning new assessment questions (higher or lower level depending on student performance), addressing vocabulary, or assigning an art project. This blanket approach within the general teacher guidance document does not meet students' individual needs, which are often more complex.

TPS STEAM into Science Grade K

Assessment tools yield relevant information for teachers to use when planning instruction, intervention, and extension.

- Materials provide various assessment tools and resources, including embedded questioning in student materials, an assessment guide, and an online assessment generator that can be used to support teachers when planning instruction, intervention, and extensions. The information gathered from the assessment tools helps teachers when planning core science and differentiated instruction. The Assessment Generator online tool can be used to create a custom assessment. The *Assessment Guide - Kindergarten Teacher Edition* offers a range of tools for evaluation and questioning, including multiple-choice and open-ended questions and performance tasks.
- In the *Teacher Program Guide - Grades K-8 Science*, the information provided states, "Level 1 learners will require more time and content from STEM and art projects in conjunction with story books." Level 2 students must follow the original scope and sequence and work on additional projects at home. Level 3 students continue the scope and sequence and can complete the advanced learner content and advanced STEM projects. Benchmark tests determine levels.
- The information gathered from the assessment tools helps teachers plan differentiated instruction. For example, the Learn By Doing Assessment Matrix categorizes students into three proficiencies: Some Proficiency, Approaching Mastery, and Mastered. Also, teachers can use Benchmark and other assessment data to assign below-grade level students Level 1 questions from the Assessment Generator, locating appropriate questions by TEKS, as stated in the *Program Guide*.

Materials provide a variety of resources and teacher guidance on how to leverage different activities to respond to student data.

- Materials provide a variety of resources but lack teacher guidance on how to leverage different activities to respond to student data. Examples of resources included in program components that teachers can leverage in responding to student data include the *Learn By Doing STEAM Activity Reader Book*, the *Student Textbook - Kindergarten Science*, the *Student Journal - Kindergarten Science*, the *STEAM Activity Guide*, the *Assessment Guide - Kindergarten Student Edition*, and the Intervention Focus Tutorial.
- The *Teacher Program Guide - Grades K-8 Science* offers general guidance for using different activities to respond to student data. "Level 1 learners will require more time and content from STEM and art projects in conjunction with story books." Level 2 students must follow the original scope and sequence and work on additional projects at home. Level 3 students continue the scope and sequence and can complete the advanced learner content and advanced STEM projects. Additional guidance in this resource directs teachers to "grade and insert results" for "Focus Questions" and "Performance Tasks" onto the report card.
- The *Assessment Guide - Kindergarten Teacher Edition* offers review activities, performance tasks, and reteach assessments to assist teachers with interventions. However, there is no guidance for which activities are used for which students at what time. Additionally, Support Matrices provide teachers with guidance on materials to use when supporting students. The materials do not provide guidance on which specific lessons or activities from the *STEAM Activity Guide* should be used for level 1 students who score Some proficiency on the Learn By Doing Assessment Rubric.

TPS STEAM into Science Grade K

Indicator 6.3

Assessments are clear and easy to understand.

1	Assessments contain items that are scientifically accurate, avoid bias, and are free from errors.	M
2	Assessment tools use clear pictures and graphics that are developmentally appropriate.	PM
3	Materials provide guidance to ensure consistent and accurate administration of assessment tools.	M
4	Materials include guidance to offer accommodations for assessment tools that allow students to demonstrate mastery of knowledge and skills aligned to learning goals.	PM

Partial Meets | Score 1/2

Materials partially meet the criteria for this indicator. Assessments are somewhat clear and easy to understand.

Assessments contain items that are scientifically accurate, avoid bias, and are free from errors. Assessment tools sometimes use clear pictures and graphics that are developmentally appropriate. Materials provide guidance to ensure consistent and accurate administration of assessment tools. Materials include some guidance to offer accommodations for assessment tools that allow students to demonstrate mastery of knowledge and skills aligned with learning goals.

Evidence includes but is not limited to:

Assessments contain items that are scientifically accurate, avoid bias, and are free from errors.

- Assessments for the grade level contain items that are scientifically accurate, avoid bias, and are free from errors. Materials accurately and correctly present content and concepts for the grade level. Formative and summative assessments include items that present content and examples fairly and impartially with no impact on student performance based on such factors as a student's home language, place of origin, gender, or race and ethnicity. This is evident in the Assessment Generator, which provides TEKS-aligned assessments, and the range of assessments in the *STEAM Activity Guide - Kindergarten Teacher Edition.*
    - For example, summative assessment items in the Assessment Generator for Kindergarten include a man sleeping under a tree and a woman walking in the wind. Another item includes a photograph of a female astronaut and an image of a child sitting near a circle.
    - For example, a performance task assessment item in Organisms and Environments includes a graphic of a picnic that shows children and adults of diverse genders and ethnicities.

Assessment tools use clear pictures and graphics that are developmentally appropriate.

- Assessment tools often use images that appear pixilated and are unclear in terms of student understanding. For example, in the Assessment Generator, the question with database ID #231 has a pixilated image of a book and asks the students, "What kind of edges does this shape

have?" The answer choices are straight, round, or wavy. The image is a book that has a very curved spine, so students, particularly kindergarten students, might not find this to be clear and could answer straight or round. Also, the question with database ID #237 shows four objects, asking, "Which of these has a rough texture?" It shows a book, a brick, a glass of liquid, and an ice cube. The brick is a very dark color and, when printed, appears even darker. It's unclear to students if it has a rough texture since the darkness of the image makes it difficult to see the details on the edges. The ice cube has wavy lines along the edges, and students may select that since the image has the most textured edges.

- The Assessment Database uses clipart images in assessment items that make the content presented and required tasks unclear to kindergarten students. For example, when asking if the person depicted is in day or night, there is a black line circle representing the Earth with a clipart person sitting on the side and a yellow circle representing the sun. Another item shows a clipart image of a cow on a green surface by a blue surface. The question asks, "Look at the image. What is this animal about to do?" The answer choices are *Eat grass, Drink water,* and *Sniff water.* The cow illustration does not clearly indicate what the animal will do.
- The *Assessment Guide - Kindergarten Student Edition* contains some pictures and graphics, with most of the material being text-based and not developmentally appropriate. Some items use simplistic clipart. For example, when asking if the person depicted is in day or night, there is a small, simple clipart of five sunflowers on a fence with a yellow circle in the sky. The question asks students to point out everything the plants need to survive in the image provided.

Materials provide guidance to ensure consistent and accurate administration of assessment tools.

- Materials provide guidance to ensure consistent and accurate administration of the various assessment tools included in program components. The Progress Monitoring section of the *Teacher Program Guide - Grades K-8 Science* provides guidance on when to administer certain assessment tools. The product has four benchmark tests and guidance for when to give each benchmark. For example, "Benchmark 1 test - to assess natural knowledge at the commencement of term before any program content being taught." Materials guide the teacher on when to administer benchmarks 2-4 throughout the year.
- Materials provide guidance for the administering of items in the Assessment Database tool. The Assessment Database entry screen provides options for teachers to select TEKS-aligned questions, choose the level of questions, and show the answers. Items in the database offer directions for multiple audiences. For example, item #5 states, "What would you wear outside to keep yourself dry?" while #48 says explicitly, "Work on your own. Explain two ways that you can group various objects?" Another item, #51, tells students to work with two or more friends.
- The *Teacher Program Guide - K-8 Science* provides information on administering and scoring questions from the Assessment Generator. After completing activities in each chapter of the *Learn By Doing STEAM Activity Reader Book*, materials state that "teachers will assess students using Level 1 and 2 questions from the Online Library - Assessment generator or Online Library - Interactive software tool...These results should be added to the assessment matrix."
- The *Teacher Textbook - Kindergarten Science* provides guidance for administering visual assessments. Materials state, "The Creative Science Curriculum encourages two types of assessment: visual lesson plan activities and quizzes/tests." Materials state teachers can conduct visual assessments by "watching students perform activities, such as found in STEM Project Editions or Arts Projects." Materials provide a progress monitoring matrix and scoring rubrics to ensure consistent and accurate administration of visual assessments.

TPS STEAM into Science Grade K

Materials include guidance to offer accommodations for assessment tools that allow students to demonstrate mastery of knowledge and skills aligned to learning goals.

- Materials lack guidance to offer accommodations for assessment tools that allow students to demonstrate mastery of knowledge and skills aligned to learning goals. For example, materials lack suggestions for time, scheduling, or setting accommodations that would allow students of varied needs and abilities to demonstrate grade-level mastery.
- Materials offer a wide range of assessments, allowing students to demonstrate mastery of knowledge and skills aligned to learning goals in various ways, including open-ended responses, projects, performance tasks, and multiple-choice questions. However, materials lack guidance for accommodating students with linguistic, neurodivergent, or other needs on assessments throughout the program.
- Materials include a means to differentiate assessments according to ability level in the Assessment Generator and provide guidance for using the leveled questions feature in the *Teacher Program Guide - Grades K-8 Science*. This tool allows teachers to select items above or below grade level that align with the standard. While this tool offers a differentiated assessment option that changes the expectation for students to demonstrate mastery, it does not give guidance to offer accommodations on assessment tools included in the program.
    - For example, an at-level question asks, “What would happen if you put a plant in a box with no air?” The below-grade level question is the same but adds the sentence, “Think about what a plant needs to live.”
    - Another example of an at-level question is, “Look at the image above. What problem could this weather cause?” The below-level question adds, “Look at how the girl is standing.”

TPS STEAM into Science Grade K

Indicator 7.1

Materials include guidance, scaffolds, supports, and extensions that maximize student learning potential.

1	Materials provide recommended targeted instruction and activities to scaffold learning for students who have not yet achieved grade-level mastery.	M
2	Materials provide enrichment activities for all levels of learners.	M
3	Materials provide scaffolds and guidance for just-in-time learning acceleration for all students.	M

Meets | Score 2/2

The materials meet the criteria for this indicator. Materials include guidance, scaffolds, supports, and extensions that maximize student learning potential.

Materials provide recommended targeted instruction and activities to scaffold learning for students who have not yet achieved grade-level mastery. Materials offer enrichment activities for all levels of learners. Materials provide scaffolds and guidance for just-in-time learning acceleration for all students.

Evidence includes but is not limited to:

Materials provide recommended targeted instruction and activities to scaffold learning for students who have not yet achieved grade-level mastery.

- Materials give an overview of recommended targeted instruction and activities to scaffold learning for students who have not yet achieved grade-level mastery in the Support Notes for Teachers section of the *Teacher Program Guide - Grades K-8 Science.* Here, materials state, “TPS has provided supplements that can be used for after school, reteaching, or additional homework.” The document notes the inclusion of the Learn By Doing Activity Reader Book RTI Scope and Sequence, which provides an alternate pacing plan for each grade level. It also states that STEAM activities “act as reteach tools for students who did not master the content with the first two components,” instruction provided through the *Learn By Doing STEAM Activity Reader Book* and textbook lessons for the grade level.
- The Support Notes for Teachers also recommend using the Online Library - Assessment Tools with “students who remain below grade level” or a “student who responds incorrectly.” In these situations, teachers can “choose Level 1 assessment questions for the TEKS being taught…and discuss answer given with student. Determine if there is a misconception and resolve.” The guidance emphasizes the role of *science language* in causing student misconceptions and recommends that teachers use the science glossary cards provided in the Online Library to review word meaning and use with students.
- When a student continues to struggle with grade-level concepts, materials recommend using the Intervention Focus Tutorial for current and previous grade-level TEKS. Materials state, “Teachers can use more or less of the leveled materials to suit the individual student’s progression. For example, if students are working below or far below grade level due to reading, teachers can use the intervention focus tutorial and choose the grade and appropriate TEKS content that should have been mastered in an earlier grade but was not.”

- Materials include teacher guidance for scaffolding instruction during lessons under the Support headers in the *Teacher Textbook - Kindergarten Science*. For example, in the Sensing Energy investigation, the Support header states, “Students may have difficulty accepting that something that is not made from matter exists. Use comparison to help them overcome this problem. For example, talk about light and dark parts of the day, talk about taking something cold out of the refrigerator and making it hot, and talk about being noisy and then being quiet. Ask the students if they could hold the light, the heat, and the sound. Encourage students to continually practice their reading.”

Materials provide enrichment activities for all levels of learners.

- Materials provide a variety of enrichment activities for level learners. Teacher guidance encourages the exploration and application of grade-level science knowledge and skills for all learners by applying new learning via STEAM activities in the *STEAM Activity Guide*. In the Underground Gardening project, students first experience sprouting plants. They then experimented to determine how water flows through various types of soil. Students then apply this knowledge to select soil for their flower pot to place their sprouts in. Students then observe and compare the plant’s growth to the parent plant. Finally, they put the class plants together and look for organisms that have taken up residence in the plants.
- Materials provide a variety of activities for all levels of learners. Teacher guidance encourages the exploration and application of grade-level science knowledge and skills for all learners by applying new learning via various activities in the *Learn By Doing STEAM Activity Reader Book*. In Chapter 3: Put Out That Fire, students first read about energy and force. The reading is followed by seven different activities aligned to the content, such as an experiment to understand how objects move on a ramp, a math graphing activity, a drawing activity, a discussion activity, and an engineering activity to design and build playground equipment.
- Materials provide enrichment activities for all levels of learners that account for learner variability. In the *STEAM Activity Guide*, the materials guide teachers to ask students to create a mind map of what they expect to find on the beach. In the Introduction of the *Learn By Doing STEAM Activity Reader Book*, information states that the authors designed the books to stimulate collaborative discussion.
- Materials provide enrichment activities for all levels of learners. In the Project Based Lessons at the back of the *Teacher Textbook - Kindergarten Science*, there are enrichment activities for all levels of learners. Other extensions, like Math extensions, are embedded into the lessons. The *STEAM Activity Guide* has RLA and Math Connections at the end of the lessons to show how they are embedded. There is evidence of enrichment in the *STEAM Activity Guide* by integrating mathematical practice.
- The *Teacher Textbook - Kindergarten Science* Matter and Properties unit states, "Advanced students: Some attributes must be calculated using mathematical concepts. Examples could be surface area, volume, or density. Density=mass/volume, the volume of a prism=cross sectional area x length." Again, the *Teacher Textbook - Kindergarten Science* Earth and Space unit asks, "Advanced students: How does the structure of the Sun allow it to keep planets in orbit around it? Answer - It is very big and exerts a large gravitational force on the planets."

Materials provide scaffolds and guidance for just-in-time learning acceleration for all students.

- The materials provide scaffolds and guidance for just-in-time learning acceleration in the *Learn By Doing STEAM Activity Reader Book - Kindergarten Teacher Edition.* Each chapter contains

several Idea boxes within the text, giving the teacher prompts and cues to support student understanding. For example, Idea box 4 in Chapter 1, The World Around Us, states, “ask the class to come up with examples of different forms of matter and then *observe*, *describe*, and *record* their properties using their senses to describe their shape, color, texture, and material. This is a great opportunity where everyone can contribute. Ask the children what questions they have about objects in the natural world? How might they answer these questions?” Throughout the chapters, these supports serve a variety of instructional purposes outside of just-in-time learning acceleration, including supporting student engagement, helping teachers deliver instructions, and demonstrating scientific concepts.

- Just in time content is provided and detailed in the teacher program guide K-8 which advises the online materials available. For example, in the *STEAM Activity Guide - Kindergarten Teacher Edition,* for TEKS 12A and B the materials state “Activity 1: Read the content about beaver dam construction to students. It can be found in the Interior and Northern Alaska. Tell students that two functions of the dam are: to protect the lodge from predators and to bring the food (tree bark) closer to the water. Actually, the dam brings the water closer to the forest. The lodge offers protection for the family, especially in the winter. Read students the content about the benefits of huddling and of microhabitat selection. '
- The materials contain teacher guidance related to strategically targeting learning gaps during first instruction. For example, the materials offer a variety of support materials that can be utilized for varied learner needs, such as picture vocabulary cards and a simplified textbook found in the online resources.

TPS STEAM into Science Grade K

Indicator 7.2

Materials include a variety of research-based instructional methods that appeal to a variety of learning interests and needs.

1	Materials include a variety of developmentally appropriate instructional approaches to engage students in the mastery of the content.	M
2	Materials consistently support flexible grouping (e.g., whole group, small group, partners, one-on-one).	M
3	Materials consistently support multiple types of practices (e.g., modeled, guided, collaborative, independent) and provide guidance and structures to achieve effective implementation.	PM
4	Materials represent a diversity of communities in the images and information about people and places.	M

Partial Meets| Score 1/2

The materials partially meet the criteria for this indicator. Materials partially include a variety of research-based instructional methods that appeal to a variety of learning interests and needs.

Materials include a variety of developmentally appropriate instructional approaches to engage students in the mastery of the content. Materials consistently support flexible grouping (e.g., whole group, small group, partners, one-on-one). Materials support multiple types of practices (e.g., modeled, guided, collaborative, independent) and provide some guidance and structures to achieve effective implementation. Materials represent a diversity of communities in the images and information about people and places.

Evidence includes but is not limited to:

Materials include a variety of developmentally appropriate instructional approaches to engage students in the mastery of the content.

- Materials include a variety of instructional approaches that are developmentally appropriate. As seen in the *Learn By Doing STEAM Activity Reader Book*, idea boxes in the What is Energy? unit provide connection opportunities to the real world, using their senses to relate to energy, and model-revision strategies in Activity 4, Sunshade. The *STEAM Activity Guide* has various instructional approaches to engage students. The teacher does classroom demonstrations, and there are tasks where students use tools to measure and collect data and engage in collaborative learning activities.
- Materials engage students in the mastery of the content through various developmentally appropriate instructional approaches in the *Learn By Doing STEAM Activity Reader Book.* Chapter 2 includes a teacher think-aloud in the idea boxes. Idea box 3 states, “Mind map the role that light plays in children's everyday lives.” The chapter also includes a classroom demonstration in Activity 2, when the teacher demonstrates an investigation that shows the behavior of light. The chapter also includes opportunities to problem-solve with teacher support when students design a sunshade in Activity 4. The chapter provides exploration with concrete and hands-on materials at the level of rigor for the course when students make noises with

various instruments to feel vibrations in Activity 5 and when feeling the change in temperature in Activity 7.

- Materials engage students in the mastery of the content through developmentally appropriate instructional approaches in the *STEAM Activity Guide*. The Natural Science: Push and Pulls Can Stop or Start or Change the Speed chapter includes opportunities for students to engage in inquiry-based learning activities to discover how magnets can move things.
- Materials engage students in the mastery of the content through various developmentally appropriate instructional approaches. In the *Learn By Doing STEAM Activity Reader Book*, students examine the behavior of a light source by shining the light on opaque, transparent, and colorful objects. This experiment uses components of simple scientific investigations and tools that are age-appropriate.
- Materials engage students in the mastery of the content through various developmentally appropriate instructional approaches. In the *STEAM Activity Guide*, the lesson suggests that the class go into the local park and observe if some plants are growing more rapidly. This type of lesson connects scientific concepts to the real world.

Materials consistently support flexible grouping (e.g., whole group, small group, partners, one-on-one).

- Materials consistently support flexible grouping—often in small groups, pairs, and whole classes. In the *STEAM Activity Guide*, there are many instances where the students are in pairs, small groups, and whole groups.
- Materials support a variety of instructional groupings in the *STEAM Activity Guide*. The Arts Integrated Lesson: Seeds has students working in small groups to explore lights and how they react to mirrors, cardboard, and wax paper. The Earth and Space Science/ELA Word Wall Activity has students work with partners to act out talking to the President about recycling. In the Amelia Rose Explores: Matter and Its Properties lesson, students work individually first, then in pairs or groups, to explore how all living things depend on living and nonliving things around them. In the Natural Science: Push and Pulls Can Stop or Start or Change the Speed chapter, the teacher demonstrates magnets to the whole group.
- Materials support a variety of instructional groupings in the *Learn By Doing STEAM Activity Reader Book*. The teacher reads the stories to the whole group. In Chapter 6, the teacher reads The Night Surprise to the group. Students work in small groups to complete Chapter 6, Activity 1, in which the students gain an understanding of the order of the planets by walking around a pretend sun. Chapter 5, Activity 5 allows students to work individually to write about their favorite object in the night sky.
- Materials consistently support flexible grouping. In the *Learn By Doing STEAM Activity Reader Book,* Chapter 3, Activity 5, the class will discuss cause and effect in the whole group and mind map examples of cause and effect using force and push or pull examples. In the *Teacher Textbook - Kindergarten Science* Tools Chapter, students are divided into pairs or small groups to learn the names of different tools and safety precautions.

Materials consistently support multiple types of practices (e.g., modeled, guided, collaborative, independent) and provide guidance and structures to achieve effective implementation.

- Materials support multiple types of practices (e.g., modeled, guided, collaborative, independent) but provide limited guidance and structures to achieve effective implementation for all TEKS. For example, in How Do You Group Objects? Chapter 1, additional hints guide teacher modeling, guided practice, and working together and independently. These hints

sometimes include these suggestions, but many times do not. Additionally, in the traditional lesson for How Do You Group Objects? there is only one reference to a type of practice, and that is in the Additional Hints Section, which reads, “As a teacher-led investigation begins with …” There are no other references to moving from modeling to guided to collaboration and no mention of guidance for how to achieve the implementation of these practices.

- Materials provide unclear guidance and structures to achieve effective implementation of multiple types of practice within the program. For example:
    - Materials provide Support Notes for Teachers in the *Teacher Program Guide - Grades K-8 Science*, giving some detail on how the program begins with the *Learn By Doing STEAM Activity Reader Book* that teaches literacy with science. Materials indicate that teachers should use the textbook, which includes expository text, investigations, assessment materials, and literacy and math-connected challenges. Additionally, teacher guidance in the *Teacher Program Guide - Grades K-8 Science* provides an overview of each program piece, what is in each piece, and the sequence of materials.
    - While the *Learn By Doing STEAM Activity Reader Book* includes idea boxes for practice during read-alouds, materials offer limited teacher guidance for implementation, including recommended time allotments for suggested practice activities. The Introduction section states, "Before you begin using the idea boxes, create some collaborative rules for discussion so that everybody gets a turn."
    - The Design Engineering Process provides general guidance for facilitating student discussion, stating, "During the sharing phase, encourage the children to actively listen to other children and participate respectfully during discussions."

Materials represent a diversity of communities in the images and information about people and places.

- Materials represent diverse communities using images and information that are respectful and inclusive. The *Learn By Doing STEAM Activity Reader Book* represents diversity. There are different races and genders; one boy was in a wheelchair. The cover of the *Learn By Doing STEAM Activity Reader Book* shows an illustration of a diverse class. The cartoon students have multiple skin colors and genders, and one is in a wheelchair. The cartoon teacher is a male with brown skin. The same characters are found in the reader's stories, as well.
- Materials represent diverse communities using images and information that are respectful and inclusive. In the Name the Scientist lesson, students learn about Issac Newton, Mae Jemison, and Ynes Mexia. These scientists represent three different cultures and both genders. The Online Library of Scientists contains fact sheets for scientists from diverse backgrounds, including males, females, and multiple nationalities and ethnicities. Scientists include Alexander Graham Bell, Ernest Just, Isaac Newton, Jane Goodall, Katherine Johnson, Mae Jemison, Marie Daley, Mario Molina, Sally Ride, and Ynes Mexia. In Scientist Fact Sheet 1, students learn that Shirley Jackson was among the first African Americans to attend MIT. Scientists - Blackline Master K-8 has a chart with named scientists and their ethnicity. For example, the materials list Dr. Helen Rodriguez Trias under the header Latinos. There is a note to use this list to assign research to students.

TPS STEAM into Science Grade K

Indicator 7.3

Materials include listening, speaking, reading, and writing supports to assist emergent bilingual students in meeting grade-level science content expectations.

1	Materials include guidance for linguistic accommodations (communicated, sequenced, and scaffolded) commensurate with various levels of English language proficiency as defined by the ELPS.	PM
2	Materials encourage strategic use of students' first language as a means to linguistic, affective, cognitive, and academic development in English.	M

Partial Meets | Score 1/2

The materials partially meet the criteria for this indicator. Materials partially include listening, speaking, reading, and writing supports to assist emergent bilingual students in meeting grade-level science content expectations.

Materials include some guidance for linguistic accommodations (communicated, sequenced, and scaffolded) not commensurate with various English language proficiency levels as defined by the ELPS. Materials encourage strategic use of students' first language for linguistic, affective, cognitive, and academic development in English.

Evidence includes but is not limited to:

Materials include guidance for linguistic accommodations (communicated, sequenced, and scaffolded) commensurate with various levels of English language proficiency as defined by the ELPS.

- Materials list the ELPS in the *Teacher Program Guide - Grades K-8 Science* and note that the content of program components is intended to align with both TEKS and ELPS for each grade level. The Program Components section lists ELL (English Language Learner) supports as a feature of each lesson in the *Teacher Textbook - Kindergarten Science* and provides examples of excerpts from grade-level lessons. These excerpts indicate that the generic guidance to support ELL students within lessons does not correspond to language domains or proficiency levels. This overview document lacks further information on guidance for linguistic accommodations commensurate with various levels of English language proficiency as defined by the ELPS.
- Materials include guidance for linguistic accommodations under the ELL header at the end of each lesson in the *Teacher Textbook - Kindergarten Science.* For example, in the Tools lesson, the materials list the following suggestions under the ELL header: "Ensure students understand the adjectives you are using to describe tools. Have students think about the words they can use to describe the different tools. Encourage students to think about prior experiences they have had in which they have thought about and discussed tools." Other lessons in the *Teacher Textbook - Kindergarten Science* offer similar suggestions as ELL accommodations. The Properties lesson directs teachers to "Ensure students understand the adjectives you are using to describe objects" and "Have students think about the words they can use to describe different objects," and the Patterns lesson offers one suggested accommodation: "Focus on opposites, such as light and dark, day and night. Encourage students to use new vocabulary, which they have heard during the lesson so far." While these suggestions guide teachers toward

supporting emergent bilingual students, the guidance is not consistently in line with providing linguistic accommodations and is not commensurate with various levels of English language proficiency as defined by the ELPS.

- Materials embed the ELPS as learning targets at the beginning of each "Amelia Rose Explores" section in the *STEAM Activity Guide - Kindergarten Teacher Edition*. For example, at the beginning of "Amelia Rose Explores Matter and its properties," materials provide a table with several "cross-curricular second language acquisition/learning strategies," including the following: "Develop basic sight vocabulary, derive meaning of environmental print, and comprehend English vocabulary and language structures used routinely in written classroom materials." Beyond the table listing learning targets at the beginning of these sections, this program component lacks guidance for providing linguistic accommodations within teacher guidance for using activities, science vocabulary, and narrative text.

Materials encourage strategic use of students' first language as a means to linguistic, affective, cognitive, and academic development in English.

- Throughout the program components, materials encourage use of students' first language and use it as a means to linguistic, affective, cognitive, and academic development in English. Materials primarily offer guidance on native language use through flashcards and translations, as well as some oral responses and discussions.
- Materials encourage the use of students' first language in suggestions under the ELL headers in the *Teacher Textbook - Kindergarten Science.* These suggestions pertain to using Spanish glossary cards included in the program components and making flashcards in languages other than English. For example, ELL header guidance in two lessons, Tools and Scientific and Engineering Practices, states: "Use the Spanish glossary cards to assist relevant students." In the Earth and Space Project-Based Lesson, ELL guidance states: "In every lesson, have students add to a science word wall. Have the English and foreign language word (if appropriate) made into flashcards. All students can learn translations using flashcards. The English version should remain on the wall until the end of each grade." Similarly, guidance in the Weather Project-Based Lesson states: "For ELL students, have a second card with the English word on one side, and the foreign language word on the reverse."
- Materials encourage the use of students' first language in suggestions under the Tips for ELL Students headers in the *STEAM Arts Project Guide K-12* Grade K lessons. These suggestions pertain to using native language to encourage responses and discussion. For example, the Teacher Text states, "If possible, have students work in collaborative groups where students share the same languages, and ideally, one student is advanced in English. Use visual and tactile models to illustrate elements of each activity and focus on the keywords. You can have students create a journal of words in their first language and in English."

TPS STEAM into Science Grade K

Indicator 7.4

Materials guide fostering connections between home and school.

1	Materials provide information to be shared with students and caregivers about the design of the program.	M
2	Materials provide information to be shared with caregivers for how they can help reinforce student learning and development.	M
3	Materials include information to guide teacher communications with caregivers.	M

Meets | Score 2/2

The materials meet the criteria for this indicator. Materials guide fostering connections between home and school.

Materials provide information to be shared with students and caregivers about the program's design. Materials provide information to be shared with caregivers for how they can help reinforce student learning and development. Materials include information to guide teacher communications with caregivers.

Evidence includes but is not limited to:

Materials provide information to be shared with students and caregivers about the design of the program.

- The materials provide the *Family/Caregiver Guide - Grades K-8 Science*, which introduces the philosophy, research-based strategies, program components, assessment information, and a glossary for each grade. Within this resource, the Program Introduction explains the research behind the program content and describes the program's philosophy in easy-to-understand language for students and caregivers. This resource also includes an overview of the components and the sequence of materials intended to be used during instruction. It is available in a digital format for sharing with parents and caregivers.
- Materials include an overview of the *Family/Caregiver Guide - Grades K-8 Science* within the *Teacher Textbook - Kindergarten Science*. This information provides teacher guidance on sharing information about the curriculum with families and caregivers.
- The *Family/Caregiver Guide - Grades K-8 Science* details elements of the program and the purpose behind its design. One element described is practical approaches to teaching and learning science and the benefits of understanding how to "confront scientific arguments, advances, and associated technologies in their daily lives." The materials list everyday science applications that will support students as they grow. The guide continues to address TPS's pedagogical approach, "[using] storytelling as its main strategy," including a reference to research that says, "Students learn best when they enjoy the way a lesson is presented."
- Further, the *Family/Caregiver Guide - Grades K-8 Science* describes research-based strategies considered as TPS developed the program. The materials cite evidence such as "Social lessons improve student learning" and "Students learn in different ways, so the content must be presented that attaches the visual kinesthetic and auditory senses." The research references assist families with understanding the design of the program.

- Additionally, the *Family/Caregiver Guide - Grades K-8 Science* includes links to online materials, and the section included in the *Teacher Textbook - Kindergarten Science* has a guide with the following sections: Program Introduction, Program Components, TEKS, ELPS, Explanation of TEA/SBOE process and [program] approach, Texas Resource Review requirements, Navigation Guide - Online Resource, Information about [program], Progress Monitoring, Family Visits and Teaching Pedagogy - Storytelling and STEAM.

Materials provide information to be shared with caregivers for how they can help reinforce student learning and development.

- Materials include the *Family/Caregiver Guide - Grades K-8 Science*, a resource designed to facilitate family support for learning. This document references the free digital access that materials provide for families to reinforce student learning.
- The *Family/Caregiver Guide - Grades K-8 Science* provides resources and strategies for caregivers to reinforce student learning and development, stating that "Parents/caregivers can help enforce some of the requirements of the TEKS at home. The work you can complete with your children will vary between assisting students studying new TEKS content and explaining how it applies to home life and practical assistance with safety measures."
- The *Teacher Textbook - Kindergarten Science* lessons include an At Home section with specific suggestions for home reinforcement. For example, this section in the Force, Motion, and Energy Lesson offers the following information to be shared with caregivers: “Encourage your child to play with a magnet at home. Investigating which materials are attracted to it, and how it will work through other materials.”
- Materials mention resources in the *Teacher Textbook - Kindergarten Science* that teachers can share, such as the glossaries included in the program with families, as these are available digitally. Here, materials also reference other resources that can be shared, such as at-home activities in the *Student Textbook - Kindergarten Science*.
- The materials provide information for parents and caregivers about ways they can reinforce learning and development. For example, the materials include a document titled How Teachers and Caregivers are Supported by STEAM Content, which provides introductory information for caregivers and concrete ways caregivers can support learning at home. For example, it provides the strategy, “Ask the students to define specific words and demonstrate them with an action or an example in a sentence.”

Materials include information to guide teacher communications with caregivers.

- Materials provide the Science Report Card as a teacher resource. This resource includes the following guidance for teacher communications with caregivers: “Please fill in the parent comment section so that we can work together to monitor your child’s progress.” The Science Report Card contains rows and columns for teachers to communicate student progress toward mastery of science and literacy standards according to four levels: Novice, Intermediate, Expert, and Not Yet Introduced.
- Materials include teacher guidance for communicating with caregivers in the *Family/Caregiver Guide - Grades K-8 Science*. This guidance includes advice for building relationships and sharing digital resources. For example, materials advise teachers to “provide digital access to caregivers at the start of each term” and suggest that teachers “hold a tutorial meeting in which the teacher can step the caregivers through the program, the digital tools, and the access they will receive to use at home.”

TPS STEAM into Science Grade K

- The *Teacher Program Guide - Grades K-8 Science* offers additional information to guide teacher communication with caregivers, including suggestions for holding regular meetings and emphasis on the importance of actively working with caregivers. This guidance document states that “teachers may wish to ask various caregivers to come into the classroom to discuss how their job roles utilize various STEAM approaches” and affirms that doing so “will also enable caregivers to communicate with the students and feel valued within their child’s education.” It also guides teachers to “acknowledge and show gratitude for the time caregivers give to help the students.”

TPS STEAM into Science Grade K

Indicator 8.1

Materials include year-long plans with practice and review opportunities that support instruction.

1	Materials are accompanied by a TEKS-aligned Scope and Sequence outlining the order in which knowledge and skills are taught and built into the course materials.	M
2	Materials provide clear teacher guidance for facilitating student-made connections across core concepts, scientific and engineering practices, and recurring themes and concepts.	M
3	Materials provide review and practice of knowledge and skills spiraled throughout the year to support mastery and retention.	M

Meets | Score 2/2

The materials meet the criteria for this indicator. Materials include year-long plans with practice and review opportunities that support instruction.

Materials are accompanied by a TEKS-aligned Scope and Sequence outlining the order in which knowledge and skills are taught and built into the course materials. Materials provide clear teacher guidance for facilitating student-made connections across core concepts, scientific and engineering practices, and recurring themes and concepts. Materials provide review and practice of knowledge and skills spiraled throughout the year to support mastery and retention.

Evidence includes, but is not limited to:

Materials are accompanied by a TEKS-aligned Scope and Sequence outlining the order in which knowledge and skills are taught and built in the course materials.

- The materials include a TEKS-aligned Scope and Sequence in the Teacher Support Guide and *Teacher Textbook - Kindergarten Science*. This resource lists all of the TEKS for each unit and includes units with summaries, the number of class periods to complete the unit, and the aligned TEKS. For example, in Unit 2, Matter and Energy, materials list twenty-one aligned TEKS.
- Materials suggest sequencing with the pacing guide in the Teacher Support section. The Pacing Plan/Year Planner has a calendar of dates to complete each lesson and includes guidance on reteaching and revision. For example, the unit on Matter takes place over eight class periods with three lessons for reteaching and revision. The TEKS listed for the lessons are referenced in the textbook material.
- Materials are accompanied by online sequencing guides in the Texas Proclamation 2024 – STEAM into Science – Kindergarten TEKS Correlations. The document lists the TEKS sequentially and identifies where that standard is taught in the materials with an accompanying link.

Materials provide clear teacher guidance for facilitating student-made connections across core concepts, scientific and engineering practices, and recurring themes and concepts.

- The materials provide year-long tools that indicate where teachers may find opportunities for facilitating student-made connections across core concepts, scientific and engineering practices, and recurring themes and concepts. The materials provide a grade-level scope and sequence document outlining the instances where core concepts, SEPs, and RTS are present throughout

program components. Additionally, the *Learn By Doing STEAM Activity Reader Book - Kindergarten Teacher Edition* contains an Appendix and Essential Content Guide, both outlining chapter contents and connections to science TEKS. The Appendix shows the science concepts covered in each chapter, and the Essential Content Guide shows which chapters align with a given science TEKS.

- Teacher guidance in the *Learn By Doing STEAM Activity Reader Book - Kindergarten Teacher Edition* supports facilitating student-made connections across scientific and engineering practices and recurring themes and concepts. For example, teacher guidance under the Scientific Method header for the first chapter states, “In many experiments, there is an obvious cause and effect; for example, measuring the growth of a plant with or without light. When opportunities arise throughout the chapters or activities, discuss the link between a cause and effect.” Further guidance under the Systems heading helps facilitate student-made connections to cause and effect: “Where appropriate in each chapter, use an example to show a system and how it is dependent on its parts to be fully functioning. Systems provide an opportunity to review cause and effect, for example: Car - battery is flat (cause), car will not be able to move (effect); Plant - with no water (cause), the plant will wilt and die (effect).”
- The Science is a Verb category in the *Teacher Textbook - Kindergarten Science* includes a Teacher Guided Questions to Inquiry section for each lesson. These questions provide guidance for facilitating student-made connections. For example, materials provide questions for the lesson What Is Day and Night? Some questions include: “What pattern does day and night follow? How can you use the pattern of day and night to predict what the sky will look like in 12 hours? [I]n 24 hours?” Additionally, teacher guidance states, “Today’s lesson involves the analysis of data. When analyzing data, we often look for patterns. Discuss with students the pattern in the data from today’s lesson. Discuss with them how this pattern can be used to explain the scientific phenomenon from today’s lesson.” For each set of questions there is guidance in the Additional Hints section.

Materials provide review and practice of knowledge and skills spiraled throughout the year to support mastery and retention.

- The Pacing Calendar/Year Planner specifies dates for “revision, assessment, and reteach” after each unit. The Horizontal alignment chart shows teachers how knowledge and skills spiral throughout the year. Teachers can also view spiraling from other grades using the vertical alignment chart.
- Materials also provide spiraled practice using the Assessment generator and Interactive software tools. This tool provides, by TEKS, by skill level questions. There is also an interactive software tool loaded with web-based auto graded questions and teachers can add their own content into this tool.
- Materials provide review and practice opportunities in the *Learn By Doing STEAM Activity Reader Book – Kindergarten Student Edition* to support mastery and retention. For example, in the Systems unit, the instructions for teachers states:
- 'Introduce the concept of systems to the children and explain that a system is a sum of its parts. ….. Where appropriate in each chapter, use an example to show a system and how it is dependent on its parts to be fully functioning”.
- Materials include project-based lessons incorporating multiple standards within an investigation, including some previously taught. For example, the project-based lesson Light follows Force, Motion, and Energy and has multiple standards.

TPS STEAM into Science Grade K

December 2023

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Indicator 8.2

Materials include classroom implementation support for teachers and administrators.

1	Materials provide teacher guidance and recommendations for the use of all materials, including text, embedded technology, enrichment activities, research-based instructional strategies, and scaffolds to support and enhance student learning.	M
2	Materials include standards correlations, including cross-content standards, that explain the standards within the context of the grade level.	M
3	Materials include a comprehensive list of all equipment and supplies needed to support instructional activities.	M
4	Materials include guidance for safety practices, including the grade-appropriate use of safety equipment during investigations.	M

Meets | Score 2/2

The materials meet the criteria for this indicator. Materials include classroom implementation support for teachers and administrators.

Materials provide teacher guidance and recommendations for the use of all materials, including text, embedded technology, enrichment activities, research-based instructional strategies, and scaffolds to support student learning. Materials include standards correlations, including cross-content standards, that explain the standards within the context of the grade level. Materials include a comprehensive list of all equipment and supplies needed to support instructional activities. Materials include guidance for safety practices, including the grade-appropriate use of safety equipment during investigations.

Evidence includes but is not limited to:

Materials provide teacher guidance and recommendations for the use of all materials, including text, embedded technology, enrichment activities, research-based instructional strategies, and scaffolds to support and enhance student learning.

- The materials include guidance and recommendations in the *Teacher Program Guide – Grades K–8 Science*, with a program introduction, program components, TEKS, LEPS, and a navigation guide to online resources. Within the guide, materials provide an explanation of the different components and how they are used. This resource also includes teacher guidance for getting started with the material with embedded technology. For example, materials explain the use of materials such as online libraries, *Teacher Textbook* lessons, *Student Textbook* activities, and assessment tools.
- The materials are organized to facilitate ease of implementation and use. The *Teacher Textbook - Kindergarten Science* contains an overview of the components, similar to the *Teacher Program Guide - Grades K-8 Science*. When the lessons begin, an overview guide lists the TEKS taught, scaffolding information, objectives, and misconceptions. Next, the lesson plan lays out the time that will be required, the materials needed, and the time estimation for each activity.
- The materials include a *Learn By Doing STEAM Activity Reader Book - Kindergarten Teacher Edition*. This book provides reading guidance, comprehension skills, and support for creating and

editing drafts. It also includes teacher guidance for activities, vocabulary, the scientific method systems, the engineering design process, and safety in the classroom.

Materials include standards correlations, including cross-content standards, that explain the standards within the context of the grade level.

- The materials include science standards correlations and cross-content connections for lesson units, lessons, and activities. In the *Teacher Textbook - Kindergarten Science,* the TEKS for each lesson is listed on the top of each page. In the *STEAM Activity Guide - Kindergarten Teacher Edition,* materials incorporate science, technology, engineering, art, and math cross-content connections. Each activity lists the science standards aligned to that lesson. Word Wall activities also list the science standards aligned to that lesson.
- The materials include cross-content standards for ELA, math, and social studies in the Essential Content Guide at the back of the *Learn by Doing STEAM Activity Reader Book - Kindergarten Teacher Edition.* This guidance document contains the chapter information and the content taught across science, math, and English language arts but does not list specific TEKS. For example, Chapter 2 is about energy, light, and shadows. In addition, it contains design engineering, counting and estimation, simple addition, communication of results, and vocabulary.

Materials include a comprehensive list of all equipment and supplies needed to support instructional activities.

- Materials provide a STEAM into Science Grade Kindergarten Textbook Kitting List, which alphabetically lists all required materials to complete activities and investigations.
- Materials are listed for each lesson. The *Teacher Textbook - Kindergarten Science* has each part of the lesson with a list of materials needed for that section. For example, in the Tools lesson under instruction, there is a list of materials necessary for the instruction part of the lesson. Following along in the same lesson, under the Investigation section, there is another list of materials needed for the investigation part. In Force, Motion, and Energy, the Magnets investigation lists “a decorative magnet, or a magnetic toy that students are familiar with from the classroom and a selection of magnets of different shapes and sizes.”

Materials include guidance for safety practices, including the grade-appropriate use of safety equipment during investigations.

- Materials include guidance for safety practices—for example, the Scientific, Investigation, and Reasoning Handbook – Grade K. The first lesson, Working Safely and Responsibly, reviews how to behave safely in science lessons.
- The *Learn By Doing STEAM Activity Reader Book - Kindergarten Teacher Edition* includes a section titled Safety in the Classroom. It directs teachers to follow state and school safety guidelines. The *Learn By Doing STEAM Activity Reader Book - Kindergarten Teacher Edition* contains a paragraph about safety. It is a general reminder to demonstrate safe practices described by the Texas Education Agency (TEA) and follow school and district guidelines before conducting any investigation.
- The materials provide student guidance for safety practices and grade-appropriate use of safety equipment during investigations. In the *Assessment Guide - Kindergarten Student Edition*, the

lesson is on Working Safely and Responsibly. During the lesson, students discuss safety and learn how to use safety goggles.

TPS STEAM into Science Grade K

Indicator 8.3

Materials provide implementation guidance to meet variability in program design and scheduling.

1	Materials support scheduling considerations and include guidance and recommendations on required time for lessons and activities.	M
2	Materials guide strategic implementation without disrupting the sequence of content that must be taught in a specific order following a developmental progression.	M
3	Materials designated for the course are flexible and can be completed in one school year.	M

Meets | Score 2/2

The materials meet the criteria for this indicator. Materials provide implementation guidance to meet variability in program design and scheduling.

Materials support scheduling considerations and include guidance and recommendations on required time for lessons and activities. Materials guide strategic implementation without disrupting the sequence of content that must be taught in a specific order following a developmental progression. Materials designated for the course are flexible but can be completed in one school year.

Evidence includes but is not limited to:

Materials support scheduling considerations and include guidance and recommendations on required time for lessons and activities.

- Materials include support for scheduling considerations, guidance, and recommendations on required time for lessons and activities. For example, the Texas Proclamation 24 Scope and Sequence provides suggestions for the number of minutes and class periods to spend on lessons. This information is available in the online resources. In the Online Library, the Teacher Support Learn By Doing Scope and Sequence RTI Kindergarten states that it provides an "alternate scope and sequence for Response to Intervention (RTI) students." Within this document, there is a "recommended duration of lesson/minutes."
- The materials provide guidance and recommendations on the required time for lessons and activities. The Teacher Resource Guide includes a Pacing Plan/Year Plan. The guide only suggests what days to teach the units. The *Teacher Textbook - Kindergarten Science* has a Scope and Sequence and a pacing calendar available. The pacing calendar takes into account holidays and potential teacher work days.
- Materials include pacing suggestions for the grade level. For example, in the *Teacher Textbook - Kindergarten Science*, there is guidance for the number of class periods required, time, and how many lessons are needed for reteaching and revision.

Materials guide strategic implementation without disrupting the sequence of content that must be taught in a specific order following a developmental progression.

- Materials guide strategic implementation. For example, the *Learn By Doing STEAM Activity Reader Book - Kindergarten Teacher Edition* contains an essential content guide. The guide shows that the materials begin with Unit 1, The World Around Us, in which students learn safe

science procedures about matter and physical properties. This builds into other units, such as Unit 2, Energy, Light, and Shadows, and Unit 8, Spot is Alive, in which students apply the skills learned in Unit 1.

- Materials guide sequencing. For example, in the Online Resources, the Scope and Sequence illustrate that the units build upon each other in a specific sequence. Unit 1 begins with scientific and engineering practices, which will be applied throughout the other units.
- The materials contain lessons that build on each other. The first unit is the Tools unit. This unit introduces the tools used for the investigations in the following lessons.

Materials designated for the course are flexible and can be completed in one school year.

- Materials suggest ways to complete the curriculum in one school year. For example, in the Online Resources, the Scope and Sequence illustrate the materials can be achieved in 150 class periods of 50 minutes each.
- The materials provide alternative pacing for Response to Intervention (RTI) students in the Teacher Support Learn By Doing Scope and Sequence RTI.
- Materials provide a Pacing Plan/Year Planner with a review of how it would fit into a typical single school year. The Pacing Plan/Year Planner includes a complete August-May view reflecting how the course fits within a single school year. The *STEAM Activity Guide* includes a vignette activity and provides a day-by-day description of each activity. The breakdown informs teachers' decisions to prioritize lesson components or adjust due to time constraints.

TPS STEAM into Science Grade K

Indicator 9.1

The visual design of materials is clear and easy to understand.

1	Materials include an appropriate amount of white space and a design that supports and does not distract from student learning.	No
2	Materials embed age-appropriate pictures and graphics that support student learning and engagement without being visually distracting.	No
3	Materials include digital components that are free of technical errors.	Yes

Not Scored

The visual design of materials is sometimes clear and easy to understand.

Materials do not include an appropriate amount of white space and a design that supports and distracts from student learning. Materials do not embed age-appropriate pictures and graphics that support student learning and engagement without being visually distracting. Materials include digital components that are free of technical errors.

Evidence includes but is not limited to:

Materials include an appropriate amount of white space and a design that supports and does not distract from student learning.

- Materials do not include an appropriate amount of white space and a design that supports and does not distract from student learning. While some student-facing program components in the materials include an appropriate amount of white space and a design that supports student learning, the core components do not. Additionally, student-facing materials in the Kindergarten program are more word-based than picture-based, which does not support learning for non-readers.
    - For example, the *Student Textbook - Kindergarten Science* is often text-heavy, lacking adequate white space and other design features to support student learning. Lessons in the textbook often contain closely spaced text with some graphic or text features. Chapters and lessons within the textbook lack clear titles that would help students navigate the various topics, activities, and sections.
    - For example, the traditional lesson, Tools, in the *Student Textbook - Kindergarten Science* begins by presenting information on various tools scientists use. One page presented to Kindergarten students is three-fourths single-spaced text with three clipart images embedded in it. The following pages present a table of keywords, which appear in bold, with single-spaced definitions. These pages present forty-six key words across four pages and lack an appropriate amount of white space and a design that supports learning for Kindergarten students.
    - For example, the Student Journal provides students with white space to respond to fill-in-the-blank questions and space to create projects based on the questions.

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Materials embed age-appropriate pictures and graphics that support student learning and engagement without being visually distracting.

- The materials do not embed age-appropriate pictures and graphics that support student learning and engagement without being visually distracting. Materials frequently use unrealistic clipart rather than realistic pictures and graphics when presenting science content and concepts and embed fun and decorative pictures and graphics that visually distract students.
    - For example, the Energy unit in the *Student Textbook - Kindergarten Science* has no real-life photos to support students in understanding an abstract scientific concept.
    - For example, in Chapter 1, Activity 2 of the *Learn By Doing STEAM Activity Reader Book - Kindergarten Student Edition,* students identify hard and soft things. All images presented are clipart: a leaf, rock, wood, balloon, feather, glass, dog, pillow, and hammer.
    - For example, the *Science Picture Glossary Grade Kindergarten* presents a clipart image of the Sun for the word *Sun* rather than an authentic photograph to support student learning that the sun is a star in the solar system and not a yellow circle.

Materials include digital components that are free of technical errors.

- The materials include digital components that are free of technical errors.
    - For example, the *STEAM Activity Guide - Kindergarten Student Edition* includes activities that are free of inaccurate content materials or information, and the *Teacher Edition* is free of wrong answers to questions asked.
    - For example, teacher and student editions of digital textbooks included in the materials are free of spelling, grammar, and punctuation errors.

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Indicator 9.2

Materials are intentionally designed to engage and support student learning with the integration of digital technology.

1	Materials integrate digital technology and tools that support student learning and engagement.	Yes
2	Materials integrate digital technology in ways that support student engagement with the science and engineering practices, recurring themes and concepts, and grade-level content.	No
3	Materials integrate digital technology that provides opportunities for teachers and/or students to collaborate.	No
4	Materials integrate digital technology that is compatible with a variety of learning management systems.	No

Not Scored

Materials are somewhat intentionally designed to engage and support student learning with the integration of digital technology.

Materials integrate digital technology and tools that support student learning and engagement. Materials do not integrate digital technology in ways that support student engagement with science and engineering practices, recurring themes and concepts, and grade-level content. Materials do not integrate digital technology that provides opportunities for teachers and/or students to collaborate. Materials do not integrate digital technology that is compatible with a variety of learning management systems.

Evidence includes but is not limited to:

Materials integrate digital technology and tools that support student learning and engagement.

- The materials integrate technology and tools that support student learning and engagement. Materials include digital access to components, online assessments, tutorials, and digital technology.
    - For example, the Interactive Assessment Tool allows students to complete tests and quizzes online.
    - For example, the Intervention Focus Tutorial provides digital access to below-level, at-level, and above-level science TEKS for students needing differentiated instruction.
    - For example, the *Teacher Program Guide - Grades K-8 Science* outlines the digital components of the instructional materials and gives an overview of materials that can be accessed digitally.
    - For example, the Online Library includes NEST family videos and workbooks.
    - For example, materials include access to the TPS Alaska Library, which provides a coloring book and audio clips.
    - For example, the online platform contains digital versions of Reader Activity Books and digital photographs of tools.

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Materials integrate digital technology in ways that support student engagement with the science and engineering practices, recurring themes and concepts, and grade-level content.

- Materials do not integrate digital technology to support student engagement with science and engineering practices, recurring themes and concepts, and grade-level concepts. While materials refer to online resources in lessons and activities and provide online assessments, the program lacks such digital technology components as demonstration videos or interactive labs that would support student engagement with the SEPs, RTCs, and grade-level content.

Materials integrate digital technology that provides opportunities for teachers and/or students to collaborate.

- The materials do not integrate digital technology that provides opportunities for teachers and/or students to collaborate. The materials indicate all online resources are separate links and not interconnected, thus preventing digital collaboration among students and teachers.
- Although the materials include online assessments in the Interactive Assessment Tool, they do not allow teachers and/or students to collaborate. The assessments are designed to be completed individually after they are printed in paper-based form by the teacher.
- The materials do not recommend platforms, links, or resources on how those digital suggestions can be accessible to students and teachers.
- The materials do not provide suggestions or resources for collaboration between teachers and students.

Materials integrate digital technology that is compatible with a variety of learning management systems.

- The materials do not integrate digital technology that is compatible with a variety of learning management systems, but do note that all digital materials are accessible via any computer or mobile device with the internet. The materials recommend internet use for many research-focused activities in student-facing materials.
- The *Teacher Program Guide - K-8 Science* states that digital technology within the materials is compatible with Clever but does not mention other learning management systems.

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Indicator 9.3

Digital technology and online components are developmentally and grade-level appropriate and provide support for learning.

1	Digital technology and online components are developmentally appropriate for the grade level and align with the scope and approach to science knowledge and skills progression.	No
2	Materials provide teacher guidance for the use of embedded technology to support and enhance student learning.	No
3	Materials are available to parents and caregivers to support student engagement with digital technology and online components.	Yes

Not Scored

Digital technology and online components are somewhat developmentally and grade-level appropriate and provide some learning support.

Digital technology and online components are not developmentally appropriate for the grade level and do not align with the scope and approach to science knowledge and skills progression. Materials do not provide teacher guidance for the use of embedded technology to support and enhance student learning. Materials are available to parents and caregivers to support student engagement with digital technology and online components.

Evidence includes but is not limited to:

Digital technology and online components are developmentally appropriate for the grade level and align with the scope and approach to science knowledge and skills progression.

- Digital technology and online components included in the materials comprise print-based content and resource materials in the Online Libraries and guidance to use the internet for web-based research and resources in student activities. Materials include the following in the Online Libraries: Assessment Tools, Reader Activity Books, Student Reasoning Library, Blackline Master Library, STEAM Library, and the Digital Frog Library. These resources and tools are consistent across the K-8 program and not specific to the grade level.
- The materials lack digital technology and online components outside of the digitized files of print materials. The online materials consist mostly of print-based materials being placed in an online viewer or images being available for display.

Materials provide teacher guidance for the use of embedded technology to support and enhance student learning.

- The materials do not provide teacher guidance for the use of embedded technology to support and enhance student learning.
    - For example, the materials lack teacher guidance for the use of embedded technology in the *STEAM Activity Guide – Kindergarten Teacher Edition*. Materials state, "Please refer to your school's computer safety policy for work that involves students using computers and the Internet."

- For example, materials provide a Crosscutting Library of photographs but lack teacher guidance for embedding these photographs within lessons and activities to enhance student learning.
- For example, while materials provide a video guiding teachers on using the interactive software tool and the assessment generator, this guidance is lacking for other components, such as the intervention focus tutorial. Materials do not include step-by-step instructions for setting up and using technology. Materials do not provide troubleshooting tips for common problems teachers may encounter.

Materials are available to parents and caregivers to support student engagement with digital technology and online components.

- Materials are available to parents and caregivers to support student engagement in online components.
  - For example, materials state in the *Family/Caregiver Guide - Grades K-8 Science* that "TPS Publishing Inc. provides parent digital access to family to families for all homework assignments, and to the list of keywords and definitions." This document also includes guidance for parents and caregivers on the use of digital materials, including how to navigate digital textbooks and the Assessment Generator. This document allows parents and caregivers to support student engagement with such online resources as TPS glossary cards and the Intervention Focus Tutorial.
  - For example, materials provide an e-letter that provides online access to materials, resources, and activities to reinforce student learning and development.