TPS STEAM into Science Grade 1

TPS STEAM into Science Grade 1 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 as 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 the 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 develop, practice, and demonstrate mastery of grade-level appropriate scientific and engineering practices. In activity 5, Designing a Windsock, the teacher reminds the students of the design engineering process.
- Materials provide opportunities to develop, practice, and show mastery of grade-level-appropriate scientific practices. The *Teacher Textbook - Grade 1 Science* has a project-based lesson that guides students through the engineering process. The lesson states, "In this lesson, you will go through the steps of the engineering design process to solve a real-life problem that affects us in the classroom or at school. We will begin by identifying a problem we can solve by making something or designing a new system." Students also practice scientific practices in the

Student Textbook - Grade 1 Science. Students are put into different groups and are assigned weather observations. They share the results with the class. In the *Learn By Doing STEAM Activity Reader Book - Grade 1 Teacher Edition*, two activities use the design engineering process: Activity 5, Designing a Windsock, and Activity 2, Design Challenge (they design a device to slow the melting of ice cubes).

- Materials provide opportunities for developing SEPs. For example, the *Teacher Textbook - Grade 1 Science* begins the Project-Based Lessons. These lessons present a phenomenon and then guide teachers on using the Engineering and Design process to find a solution. For example, students are presented with the phenomena to determine patterns in behaviors of parents and offspring that help offspring survive.

Materials provide multiple opportunities to make connections 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, in Lesson 6B - TRAD - Heating and Cooling, the *Teacher Textbook - Grade 1 Science* provides instruction on what happens when heating and cooling water. The recurring theme seems to be factors that cause change; however, that explicit connection isn't made with students aside from using the word change. The materials use the word change at the beginning of the lesson but then use "turn into" later in the lesson just before providing the keywords. There are no opportunities for connections between concepts to help students relate to factors that cause change, such as how pushes or pulls can result in a change in the motion of an object.
- 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 Interdependence lesson 12C - TRAD in the *Teacher Textbook - Grade 1 Science* provides instruction regarding plants and animals in ecosystems. However, there is no connection made between concepts about interdependence, such as how a toy is a whole made up of interdependent parts that make the toy function.
- The materials provide some connections between and within overarching concepts through the narrative texts in the *Learn By Doing STEAM Activity Reader Book - Grade 1 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.
- The materials sometimes provide opportunities to make connections between and within overarching concepts using recurring themes. In the S*TEAM Activity Guide - Grade 1 Teacher Edition*, Lesson 7A - AS - Does My Strength Affect The Push Or Pull Of An Object? the materials provide a discussion activity that states, "In this activity, you have looked at how things can cause objects to change. Now, with your teacher and classmates, discuss how factors can cause plants or animals, and systems to change." This connects within and between overarching themes but is a rare occurrence in the materials and is only found in the resource teachers are not instructed to use until Step 3, according to the publisher's instructions for implementing the program. This lesson connects across grade levels as well since it is the exact same lesson as in the S*TEAM Activity Guide - Grade 2 Teacher Edition.*

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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 strategic guidance and connections to the grade-level TEKS by including them at the beginning of each lesson for teacher guidance. For example, the TEKS are at the top of the pages in the *Teacher Textbook - Grade 1 Science*, and the activities listed follow those TEKS. The TEKS listed are appropriate for the content and grade level.
- Materials explain how the program is structured with a rationale for the sequence of units. The *Teacher Program Guide - Grades K-8 Science* states, "Our team utilizes a by standard, strand and/or learning cycle structure which engages students in active interaction with the content." The *Teacher Textbook - Grade 1 Science* and Support Library houses the Scope and Sequence of detailed documents providing information for how content builds. In the *Teacher Textbook - Grade 1 Science*, each lesson plan provides scaffolding information to explain how content builds across some grades, but vertical alignment information is inconsistent.
- The 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 force and motion in the *Learn By Doing STEAM Activity Reader Book - Grade 1 Teacher Edition* contains idea boxes and focuses on STEM careers that explain, describe, and make connections to develop conceptual understanding. Also, the materials systematically develop students' content knowledge and skills appropriate for the concept.

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.

- The *Learn By Doing STEAM Activity Reader Book* provides opportunities for students to ask questions and conduct investigations, engage in problem-solving to make connections across disciplines, and develop an understanding of science concepts. In an activity in the Force, Motion, and Energy unit, students use pipe cleaners, string, and cardboard to design a swing and measure how high the swing goes. In the *STEAM Activity Guide - Grade 1 Student Edition*, students have opportunities to conduct investigations.
- The materials include opportunities for students to ask questions and plan and conduct investigations. The *Teacher Textbook - Grade 1 Science* includes teacher-guided questions for inquiry. For example, "What animals did you eat this week?" These guided questions are over a unit on What Do Animals Eat? The teacher begins a discussion on what they ate for dinner and if it was a plant or animal. Student discussion is teacher-led and centered around provided questions.
- Materials provide multiple opportunities for connections across disciplines. Word Wall lessons, STEM, and art projects provide connections across disciplines. In the *STEAM Activity Guide - Grade 1 Teacher Edition*, students create a series of movements representing the strengths and directions of pushes and pulls. Next, students use materials to create a ramp and a pulley system. Students collect data and analyze the data. Next, they answer questions, participate in shared research, and read a story. This activity involves cross-curricular using math and language arts.

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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 somewhat 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 - Grade 1 Teacher Edition*, the materials provide narrative texts that provide access to phenomena that provide a springboard for learning. However, in the *Teacher Textbook - Grade 1 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 - Grade 1 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 3 of the *Learn By Doing STEAM Activity Reader Book - Grade 1 Teacher Edition*, students are provided an opportunity to design a windsock. The teacher instructions state "assign the problem that the children need to design and build a solution for: 'Design an(d) build an object that shows the direction of a wind gust.'" There is no authentic problem the students are solving and no relevant context or purpose for engaging in the engineering design process for this activity; the materials simply tell the students to complete the task.

- 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 how factors or conditions can cause objects to change or stay the same as this relates to pushes and pulls, but there are no opportunities to make a connection to how this also relates to how changes in the location of earth materials can be caused by different factors.

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

- The materials provide opportunities to leverage students' prior knowledge and phenomena-related experiences. For example, in the Earth and Space unit, the teacher introduces the activity by asking students to name things they think are natural. After presenting the word *resource*, the teacher asks students if they can think of any uses for the natural materials they listed.
- Materials intentionally leverage students' prior knowledge of engineering problems. For example, in the *Learn By Doing STEAM Activity Reader Book - Grade 1 Student Edition*, students will design an object that shows wind direction. The design solution is a model to show the direction of wind force. Students use their prior knowledge about wind to create their model. At the beginning of each chapter in the *Teacher Textbook - Grade 1 Science* teachers will find a section titled The Science that provides the information needed to activate student background knowledge.

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

- Materials clearly outline for the teacher the scientific concepts and goals behind each phenomenon and engineering problem. At the beginning of every chapter in the *Teacher Textbook - Grade 1 Science*, a student objective clearly defines the lesson goal. The purpose of the lesson on properties is as follows: "Students will be able to classify matter by physical properties, including shape, relative mass, relative temperature, relative flexibility, and whether material is solid or liquid." The *Teacher Textbook - Grade 1 Science* lessons contain an objective that outlines the scientific goals for each lesson. In the Interdependence lesson, the objective states, "Students will gather evidence of interdependence among living organisms such as energy transfer through food chains and animals using plants for shelter."
- Materials guide the teacher on the scientific concepts of the lessons. For example, the *Teacher Textbook - Grade 1 Science* lessons contain a section called The Science that outlines the scientific concepts for each lesson. The Interdependence lesson lists living things' characteristics, habitats and ecosystems, and relationships within an ecosystem. The *Teacher Program Guide - Grades K-8 Science* offers explanations and reasoning, starting with the order the teacher should deliver the materials, continuing with TEKS and vertical alignment, assessment, and concluding with a description 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 vertically aligned and designed for students to build and connect their knowledge and skills. For example, in *Learn By Doing STEAM Activity Reader Book - Grade 1 Teacher Edition*, when looking at a specific TEKS, Earth and Space, regarding Earth materials, the grade-level materials explore shapes, color, size, and texture and make observations as a foundation for the next grade level. In the *STEAM Activity Guide*, Amelia Rose Explores Earth and Space, the teacher reads through the story and activity. The student then completes the project and activities through the unit, which align with the kinder lessons.
- 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 Teacher Supports explain how the materials are vertically aligned. 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 are designed to build content knowledge within each chapter. Examples include the *Learn By Doing STEAM Activity Reader Books*, beginning with the storyline, Idea Boxes for

discussion, and, finally, the activities sections. Science knowledge builds as students move throughout the chapters. The *Learn By Doing STEAM Activity Reader Books* build content knowledge of energy and force in this manner. Chapter 2 introduces the concept of energy and its different forms. The students investigate heat energy with Idea Box 2 and Activity 1. In Chapter 3, students revisit the concept of energy and its role in creating forces that do work. The Energy concept is investigated in Idea Boxes 1 and 2. In Chapter 4, magnetism as a force is introduced, and in Activity 1, students explore magnets.

- Materials are designed to build content knowledge across grade levels. In the *Teacher Program Guide - Grades K-8 Science*, examples include scaffolding info that consists of the previous kindergarten standard and future standards for grades 2-5 in each chapter. In the *Teacher Textbook - Grade 1 Science*, the TEKS for the prior and following grade levels are listed under Scaffolding. In the *Teacher Textbook - Grade 1 Science*, in the Heating and Cooling chapter, the objective for kindergarten and the TEKS for second grade related to heating and cooling are listed in the Scaffolding section.

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 1 Teacher Edition* and then move to the exploration in the *Teacher Textbook - Grade 1 Science*. The *Learn By Doing STEAM Activity Reader Book - Grade 1 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 1 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 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 - Grade 1 Teacher Edition*, Chapter 3, The Treehouse Flag, the teacher reads a story. The students do activities like drawing and then designing. They progress the lesson to increase a deeper conceptual understanding. In the *Teacher Textbook - Grade 1 Science*, the lesson on Scientific and Engineering Practices, the Scaffolding Information section lists what is covered vertically by grade level. The following section, The Science, refreshes the prior knowledge learned in previous grade levels, then Common Misconceptions, followed by the Lesson Plan.
- 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,* 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 *Teacher Textbook - Grade 1 Science* chapter, Earth and Space, students experiment to observe the behavior of how water flows before reading about bodies of water on Earth and answering questions in the book. Then, in the *Teacher Textbook - Grade 1 Science*, students identify and describe a variety of natural sources of water. Students look at pictures and learn about the different types of water sources, including color, clarity, size, shape, and if they contain salt. The materials progress, and students learn how water can move rock and soil particles from one place to another.

- Materials are intentionally sequenced to scaffold learning. For example, in the *Learn By Doing STEAM Activity Reader Book - Grade 1 Teacher Edition,* Chapter 2, Louis' Thirsty Story, the information is scaffolded and deepened with complexity through the Idea Boxes. In Idea Box 1, the students are asked what happened to the ice cubes. In Idea Box 2, they are asked what happened to Louis' water. In Idea Box 3, students discuss the physical properties of water. In Idea Box 4, students are asked how the problem was solved. In Idea Box 5, students are asked to deconstruct ice cubes. In the *Teacher Textbook - Grade 1 Science*, students use what they have learned in the *Learn By Doing STEAM Activity Reader Book - Grade 1 Student Edition* to complete the activity pages for In What Ways Can Water Change.

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. For example, in the *Teacher Textbook - Grade 1 Science*, Earth and Space, students investigate and document the properties of particle size, shape, texture, and color and the components of different types of soils, as aligned to the TEKS. In the *Learn By Doing STEAM Activity Reader Book*, Chapter 6, the story talks about when rain falls and recycles itself by watering plants and filling lakes, streams, and ponds. In Chapter 6, students complete a weather table with their core knowledge.
- Materials clearly and accurately present engineering concepts. Students design and create their engineering practice project in the *STEAM Activity Guide - Grade 1 Student Edition*. In the *Learn By Doing STEAM Activity Reader Book - Grade 1 Student Edition,* students use the Engineering Design Process to create a windsock.
- Materials present grade-level-appropriate recurring themes and concepts and science engineering practices. According to the *Teacher Program Guide - Grades K-8 Science*, one of the approaches TPS uses to teach science is storytelling. "They begin their learning journey with a story relevant to their lives with scientific concepts embedded within it." "The activities sections at the end of each chapter allow the student to explore the scientific topics in activities that engage them physically and mentally."

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

- Materials provide mastery requirements that are 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 *Teacher Textbook - Grade 1 Science*, in the Matter and Energy lesson, the objective states, "Students will be able to predict and identify changes in materials caused by heating and cooling, such as ice melting, water freezing, and water evaporating." In grade 1, students focus on melting and freezing. Water vapor and the physical changes of water in terms of evaporation and condensation are not introduced in the TEKS until 3.6C.
- Materials include specific learning targets and define the boundaries of the main concepts of the grade level. At times, items that are not within the boundaries of the main concepts of the grade level are introduced in the text and then bleed into the mastery requirements to challenge advanced learners. For example, in the traditional lesson for Water, two pages of student text cover the process of erosion. Erosion is outside the boundaries of the main concept of earth materials in grade 1. The key words are then presented to students, and they don't

include the word erosion. Then, in the Focus Questions section, where students are instructed to “use the science to help you answer the questions,” they are asked to demonstrate mastery of the concept of erosion with two questions: “Why are the rocks at the bottom of rivers usually smooth?” and the provided answer is “Due to erosion.” Then, “Water can erode soil and rock. One example of this is a meander. Draw a picture of a meander and write a sentence about what erosion is.” This example illustrates how materials provide content for all levels of learners.

- Materials clearly define the boundaries of content that students must master for the grade level, including content for advanced learners. For example, in the traditional lesson on weather, students are expected to explore charts of average monthly temperatures and precipitation to notice climatological patterns. Students in grade 1 should notice daily weather and, as the TEKS demand, “explain the impact of weather on daily choices.” Students should be focused on daily weather or weather within the week, however long-term climatological patterns is an appropriate challenge for learners.

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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 - Grade 1 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 - Grade 1 Teacher Edition*. However, neither the *Teacher Textbook - Grade 1 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 only TEKS mentioned at the beginning of these lessons and narrative stories are the TEKS representing content. 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 in 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* 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 - Grade 1 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 - Grade 1 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 minimal teacher support for the horizontal and vertical alignment of the recurring themes and concepts across disciplines, as the TEKS require. For example, there are opportunities to consider how factors or conditions can cause objects to change or stay the same as this relates to pushes and pulls, but there are no opportunities to make a connection to how this also relates to how changes in the location of earth materials can be caused by different factors. 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 - Grade 1 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 - Grade 1 Science*, before each experiment, the materials offer a section titled Background and Misconceptions. In the What Happens to Materials When They are Heated or Cooled? experiment, the materials provide background information about how materials can be altered and how the molecules react.
- Materials contain explanations for teachers on grade-level misconceptions to support teachers' subject knowledge. For example, in the *Teacher Textbook - Grade 1 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. In the Heating and Cooling lesson, the section provides background information about states of matter

and how they change. The same lesson contains a section titled Common Misconceptions that states, "Students may believe that the white cloud they see coming from boiling water is a gas. In fact, gaseous water, or water vapor, is an invisible gas that will appear below this cloud. The white cloud is made of tiny water droplets as the gas condenses."

- Materials guide teachers on the recognition of barriers to student conceptual development. In the *Teacher Textbook - Grade 1 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 - Grade 1 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 section Support Notes for Teachers, 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 students' lives."
- 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 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 1

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, writing, thinking, and acting as scientists and engineers. In the *Learn By Doing STEAM Activity Reader Book*, materials provide reading through storytelling, thinking through the idea boxes, and acting through the design and engineering pieces. There are writing prompts and opportunities for students to describe what they know or have learned. In the *Student Textbook - Grade 1 Science*, there are some writing activities. Students read like scientists in the *Learn By Doing STEAM Activity Reader Book - Grade 1 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 6, Where Does All the Rain Go? students read and think like

scientists and engineers about the topic. In Activity 1 of the same chapter, students think and act like scientists to experiment with collecting and analyzing rainwater. In another chapter, students will read a story about ice cubes melting. Students are asked what they think happened. Next, in the story, the water cup has less water, and the teacher asks the students what they think happened to the water. In the *Learn By Doing STEAM Activity Reader Book - Grade 1 Student Edition*, there is consistent reading through the storytelling, thinking through the idea boxes, writing predictions and observations, and acting through the design and engineering pieces.

- Materials provide learning activities that support students' meaningful sensemaking through reading, writing, thinking, and acting as scientists and engineers. In the *STEAM Activity Guide - Grade 1 Student Edition*, students read, write, think, and act like scientists. In Matter and Its Properties, Explore It #1, students work as scientists and engineers to dissect a food item to determine what was in it. Students then conduct some investigations to determine the properties of each component. Students are introduced to identification and measurement processes.
- The materials provide teachers with guidance on labs in the Science is a Verb explanation found in the *Teacher Textbook - Grade 1 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.

- Materials sometimes provide scientific text that is not grade-level appropriate. For example, in the *Teacher Textbook - Grade 1 Science*, in the Matter and Energy lesson, the objective states, "Students will be able to predict and identify changes in materials caused by heating and cooling, such as ice melting, water freezing, and water evaporating." In grade 1, students are focusing on melting and freezing. The introduction of water vapor and the physical changes of water in terms of evaporation and condensation are not introduced in the TEKS until 3.6C.
- Sometimes, the scientific text provided is not grade-level appropriate and impairs students' ability to gather evidence and develop an understanding of concepts. For example, in the traditional lesson for Water, two pages of student text cover the process of erosion. Erosion is outside the boundaries of the main concept of earth materials in grade 1. The keywords are then presented to students, and they don't include the word *erosion*. Then, in the Focus Questions section, where students are instructed to "use the science to help you answer the questions," they are asked to demonstrate mastery of the concept of erosion with two questions: "Why are the rocks at the bottom of rivers usually smooth?" and the provided answer is "Due to erosion." and then "Water can erode soil and rock. One example of this is a meander. Draw a picture of a meander and write a sentence about what erosion is." The term *erosion* is not introduced in the TEKS until grade 4 with TEKS 4.10B.
- The materials sometimes provide scientific texts that are not grade-level appropriate. For example, in the *Teacher Textbook - Grade 1 Science*, in the traditional lesson on weather, students are expected to deal with charts of average monthly temperatures and precipitation to

notice climatological patterns. Students in grade 1 would notice daily weather and, as the TEKS demands, “explain the impact of weather on daily choices.”

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 written and graphic modes of communication to support students in developing and displaying an understanding of scientific concepts. In the *Learn By Doing STEAM Activity Reader Book - Grade 1 Student Edition*, students chart objects and mark if they are magnetic or not magnetic. In the *STEAM Activity Guide*, students will answer the question, “What happens if you heat butter?” Students answer the question and draw a picture of hard butter and a picture after it is heated.
- Materials provide multiple opportunities for students to communicate thinking on scientific concepts in written and graphic modes. The *Student Textbook - Grade 1 Science* provides the investigation, Watching Animal Families, where students record their observations in written form and by drawing. Students draw and record the matching animal offspring and parents using picture cards. Students also write to complete a table and answer questions about the investigation. In the investigation called What are the life cycle stages of living organisms? students draw their observations about the life cycle of an animal. Students then write to answer questions about animal life cycles. In the *Student Textbook - Grade 1 Science* in the How do You Group Objects unit, students use graphic organizers to classify objects by size, temperature, and weight. Students are also instructed to create a table to compare attributes for given objects.
- Materials provide multiple opportunities for students to engage in various modes of communication to display understanding. For example, in the *Student Textbook - Grade 1 Science*, Heating and Cooling unit, the students explore what happens when objects are heated and cooled. They observe several items. Then they chart and collect data about ice melting. The *Learn By Doing STEAM Activity Reader Book - Grade 1 Student Edition* has many opportunities for displaying understanding. Throughout the reader, there are fill-in-the-blanks, open-ended questions, drawing observations and ideas, and graphs for data. In Chapter 4, Who Shut That Door? There are scenarios for understanding magnets and how they work, as well as tables to collect data and analyze. In the *STEAM Activity Guide - Grade 1 Student Edition*, students fill in the blanks, have short answers, match, and fill in tables and graphic organizers.

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 *Teacher Textbook - Grade 1 Science*, students measured three objects around the classroom. Students are asked to create a model of one of the objects they learned about. Next, students are asked what their model does well and what are the limitations of the model.
- 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 - Grade 1 Science*, there is an investigation about ice and steam. Students will predict and observe an ice balloon at the beginning and end of the day and

draw what it looks like. Next, they will do the same with a jar of hot water. Students will show what they have learned by completing a diagram.

- Materials provide student engagement and perseverance of concepts through productive struggle while acting as engineers in the Scientific and Engineering Practice Project in the *STEAM Activity Guide - Grade 1 Student Edition*. In this project, students find a problem, design, and engineer a solution. Students conduct the research, plan, build a mock-up, prototype, and test it. They evaluate the results to determine how to make it better. In the What's the Matter? project, students first dissect a food item. They then conduct investigations to determine the properties of each component. They decide on problems and follow the steps to design, explain, and productively struggle through the testing of the design.

TPS STEAM into Science Grade 1

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. For example, in the *Learn By Doing STEAM Activity Reader Book - Grade 1 Student Edition*, Chapter 6, Activity 1, students hypothesize which day will have the most rain and then collect and measure rain throughout the week. The Analysis and Discussion of Results states, "Discuss which day had the least and the greatest amounts of rain. Ask them to point to the results on their bar chart." In the engineering activity in the *Teacher Textbook - Grade 1 Science*, students create a possible solution to solve a problem. Students are prompted to collect evidence, analyze results, and consider improvements.
- The materials prompt students to use evidence to support their claims. For example, in the *STEAM Activity Guide - Grade 1 Student Edition*, Force, Motion, and Energy Chapter Activity,

students work in small groups to recreate an experiment from the story What's Done is Done. The materials state, "Discuss how your work evidences that some changes caused by heating or cooling can be reversed and some cannot." On the previous page, students are asked to make claims based on the same story.

- In Chapter 5, Activity 7, Movement, of the *Learn By Doing STEAM Activity Reader Book - Grade 1 Teacher Edition*, the students are asked in the Discussion of Results section to discuss their results, identify important evidence, and engage in scientific discussion. In the Project-Based Learning section at the back of the *Teacher Textbook - Grade 1 Science*, students use evidence to support their claims.

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 1 Student Edition*, students read chapters about science content with embedded scientific vocabulary. Students then apply the vocabulary to some of the activities following each chapter. In Chapter 6, students read about water. The embedded vocabulary words include *chart, evaporation, saltwater, freshwater,* and *rain*. In Activity 1, students use vocabulary words to predict and observe which day has the most rain. In Chapter 9, students read about food chains. The embedded vocabulary words include *dependence*, *food chain*, and *habitat*. In the subsequent Activity 7, students use vocabulary words to draw a food chain for coyotes and rabbits.
- Materials include opportunities to develop and utilize scientific vocabulary in context. In the *Learn By Doing STEAM Activity Reader Book - Grade 1 Student Edition*, Chapter 1, students learn about different vocabulary words as the teacher reads the story. For example, "You are correct; matter is made of atoms, which means everything around us, including ourselves, is made of atoms." During Activity 7, the teacher reviews vocabulary using the TPS vocabulary cards. There were sufficient opportunities for developing and utilizing the vocabulary in context after having a concrete or firsthand experience. In the *Teacher Textbook - Grade 1 Science*, Properties lesson, the teacher introduces the properties, shows the objects, and discusses vocabulary as the students discover them.
- Materials include word work activities with science vocabulary. In the *Learn By Doing STEAM Activity Reader Book - Grade 1 Student Edition*, vocabulary words are printed in bold. 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.
- Materials provide defined vocabulary lists. The *Teacher Textbook - Grade 1 Science* has a section labeled Key Words. These are the vocabulary words for the unit. They 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.

- The *Learn By Doing STEAM Activity Reader Book - Grade 1 Student Edition* contains some opportunities for students to develop skills appropriate for practicing argumentation and discourse. In Chapter 2, Activity 1, students observe changes in matter caused by heating and communicate the information to others. The text says, "They should be able to describe which condition caused the ice cubes to melt faster and why this happened," and "Ask the children to actively listen to other children during sharing and participate in discussions respectfully." In Chapter 5, Activity 7, students observe how objects move down a ramp and discuss the results.

The text says, "They should be able to describe which condition caused the ice cubes to melt faster and why this happened," and "Encourage the children to actively listen to other's explanations and identify important evidence and engage respectively [sic] in scientific discussion."

- Materials provide opportunities to listen actively to others' explanations during different activities. For example, in the *Learn By Doing STEAM Activity Reader Book - Grade 1 Student Edition*, Chapter 5, the teacher discusses with the students why objects move the way they do. Teachers must "encourage the children to listen actively to others' explanations, identify important evidence, and engage respectfully in scientific discussion." In the *Learn By Doing STEAM Activity Reader Book - Grade 1 Student Edition*, Chapter 6, students are reminded to actively listen to others' explanations and engage in scientific discussion. While listening is important to developing comprehensive arguments, there are no discussion stems or prompts
- Scientific argumentation is explained in the Project-Based Learning (PBL) section of the *Learn By Doing STEAM Activity Reader Book - Grade 1 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 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 explanations of phenomena and solutions to problems. In the *Learn By Doing STEAM Activity Reader Book - Grade 1 Student Edition*, Chapter 6, Activity 6, students investigate erosion using a steam table. The Analysis and Discussion of Results section states, "Ask the students to share the drawings of their results and use their words to describe what happened. Discuss what the advantages and limitations of the stream table are. Ask the children if the stream model worked as expected." These questions exist outside of an evidence-based structure where students are prompted to justify their claims using evidence and develop an argument based on the evidence. While the opportunity exists for this to occur, the lack of focus on evidence-based arguments in the materials makes this a missed opportunity.
- Materials provide some opportunities for students to construct and present verbal responses about their solutions, but they fall short of students developing evidence-based arguments to support their solutions. In the *Learn By Doing STEAM Activity Reader Book - Grade 1 Student Edition*, Chapter 3, Activity 5, each student is asked to explain their design to the class and if it meets the design criteria. In the *Teacher Textbook - Grade 1 Science*, Scientific, and Engineering Practices chapter, students will discuss failure points about different groups' solutions as a class. This activity does not prompt students to justify their solution using evidence from the experience. Instead, the materials only ask students if the solution meets the design criteria, which requires only a yes or no response from the students.
- The materials provide some opportunities for students to share explanations; however, these opportunities do not prompt students to create arguments using evidence from learning experiences. For example, in the *Teacher Textbook - Grade 1 Science, Heating Cooling lesson,* students investigate changes to ice. The discussion in the conclusion invites students to "predict what would have happened if they had proceeded differently" in the investigation. The materials do not prompt students to construct an argument with evidence they gained in the investigation.

TPS STEAM into Science Grade 1

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.

- The 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 continues to recommend 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 state teachers should respond the same to partially incorrect responses but expect a shorter time frame to resolve misconceptions. Additional suggestions to respond to struggling learners include studying keywords and using them correctly in a sentence, using an arts project from the *Learn By Doing STEAM Activity Reader Book* for relevant TEKS, and going back to "an earlier grade to ensure prior grade learning is completed."
- Materials provide teacher guidance on anticipating student responses. In the *Learn By Doing STEAM Activity Reader Book*, materials provide guidance for anticipating student responses and

the use of questions. After one of the questions in the Question section, “How is heat used in your daily life?” materials state the following sample student responses: “Answers could include cooking, a hair dryer, and heating the house.”

- The *Learn By Doing STEAM Activity Reader Book - Grade 1 Teacher Edition* provides teachers with some possible student responses to questions and tasks in the assessment section. For example, The materials state, “Question: How can you conserve (not waste) natural resources? Example answers could include: I can turn off The faucet when brushing my teeth. I can recycle materials. I can not waste paper. I put trash in The trash can.”
- Some activities in the *Learn By Doing STEAM Activity Reader Book - Grade 1 Teacher Edition* include questions for teachers to ask students Chapter 2, idea box 1, materials direct teachers to “ask the children what they think will happen to the ice cubes?" In idea box 2, teachers “ask the children what they think will happen to Louis's water?"
- The *Teacher Textbook - Grade 1 Science* provides teachers with some possible student responses to questions and tasks. For example, when asked, “How are the life cycles of the frog, fish, and chick the same or different?” materials include sample responses such as, “They all started as eggs, and they all took about 21 days. You can see the chick coming out of the egg but not the fish or the tadpole. The tadpole grows legs over time, the chick had them when it was born.”
- The Organisms and Environment chapter in the *Teacher Textbook - Grade 1 Science* includes guided questions such as “What animals or plants did you eat this week?” The additional hints section includes guidance on anticipating student responses: “As students share their animal food items, ask them what they think the animals they ate had for dinner.”
- In the *Teacher Textbook - Grade 1 Science*, the teacher asks students questions in the summary for the Matter and Energy chapter. Materials provide guidance for student answers, such as “Some students will tell you that they soak into the ground (which may be partly true), but others will use their knowledge to work out that the water evaporates into the air.”

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

- Materials include teacher guidance on how to scaffold understanding of scientific vocabulary. The *Teacher Textbook - Grade 1 Science* provides general teacher guidance on using the vocabulary, such as encouraging students to use the glossary and the word walls to understand vocabulary.
- Materials include a list of Key Words in the *Teacher Textbook - Grade 1 Science* that lists vocabulary words and definitions used in the chapter. According to the Traditional Lesson Plans chapter, the vocabulary pages are included in the Blackline Masters and are encouraged to be sent home for students to study. The keywords listed are introduced to students in the context of the section. Students add them to their personal word glossary.
- Materials include general teacher guidance on supporting students’ development of scientific vocabulary in context. For example, in the Earth and Space chapter, a Learning Strategies and Scaffolding section states, “When they are engaged in such activities, be sure to highlight the chapter vocabulary in each activity,” and “To reach all learners better, teach vocabulary words in three ways; visually (showing examples), with an auditory component (making noises with different materials), and kinesthetically (allowing students to feel different types).”

TPS STEAM into Science Grade 1

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 *Teacher Textbook - Grade 1 Science* Literacy Challenge section, materials include opportunities for scientific debate. Materials explain that debate is not an argument and that scientists use data to support their argument. In the Organisms and Environment chapter under the Literacy challenge, students pick a side and argue scientific viewpoints. Students think about frogs and the different scientific debates that are linked to frogs. Students work in pairs and argue different scientific viewpoints over frogs being used in research.
- 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.
- In the front matter of the *Learn By Doing STEAM Activity Reader Book - Grade 1 Teacher Edition*, materials include general guidance on preparing for student discourse and supporting students in using evidence to construct claims. Materials direct teachers to have students write about their experiments, including analysis of their results. Materials further state, “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?” In Chapter 2, students discuss their results in the Activity 1 ice cube experiment. The *Learn By Doing STEAM Activity Reader Book - Grade 1 Teacher Edition* states, “Remind them to listen actively to others' explanations to identify important evidence and engage respectfully in scientific discussion.”
- Materials provide guidance on creating written drafts collaboratively in the *Learn By Doing STEAM Activity Reader Book - Grade 1 Teacher Edition*, Introduction, Creating and Editing Drafts. Materials indicate that teachers should create “... these written drafts with the children based upon the subject and storylines in each chapter.” Guidance continues to provide an outline of draft steps that include planning, developing drafts in oral pictorial form, revising drafts by adding details, and editing drafts for basic conventions.

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

- Materials provide support and guide teachers in facilitating the sharing of students’ thinking. In the *Learn By Doing STEAM Activity Reader Book - Grade 1 Teacher Edition*, the materials provide teacher guidance to encourage the students to share what they learned with the class and engage in scientific discussion.

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- In the introductory pages of the *Learn By Doing STEAM Activity Reader Book - Grade 1 Teacher Edition*, the materials provide some guidance for facilitating the sharing of students' thinking and finding solutions throughout the materials. For example, under the heading Scientific Method, the materials state, "At the end of each experiment, ask the children to share their work and actively listen to other children during the sharing and participate in discussions in a respectful manner."
- Materials provide support and guidance for teachers in facilitating the sharing of students' thinking and finding solutions. Specific guidance is provided about communication in the *Teacher Textbook - 1st Grade 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. For example, students explore magnets in the *Learn By Doing STEAM Activity Reader Book - Grade 1 Teacher Edition*, Chapter 4, Activity 1. The Analysis and Discussion of The Results section states, "Ask the children to describe the movement of the magnetic objects when the magnet was close to them. Ask them to look at their results and see if there is a pattern. What did the objects that tested as magnetic have in common?" The Conclusion section states, "Discuss with the children whether their predictions were correct." In Chapter 5, idea box 2, the text suggests that the teacher demonstrate and discuss the change in seasons and day and night by using models and probing questions. "Ask them what changes they expect to see in the sky between the seasons. Ask how day and night change with seasons; longer periods of darkness in the winter and longer periods of daylight in the summer."

TPS STEAM into Science Grade 1

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.

- 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.
- The materials provide multiple assessments in the *Assessment Guide - Grade 1 Teacher Edition*. This booklet contains both traditional assessments and project 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 (formative and summative) that contain both traditional test questions and project-style application tasks.

- Materials provide formative assessments. The formative assessments include "Level 1 questions in the interactive software tool or assessment generator; STEM project Explore 1 and 2; Let's Talk About It, Let's Draw It, Stop, Look, Think! - Amelia Rose arts projects." The *Assessment Guide* Chapter-Matter includes assessments such as Open Questions, Tasks, and Multiple Choice. For example, the task Chocolate Molds asks questions such as, "Is the melting of chocolate a reversible change?" "Can you think of other examples of reversible changes involving melting and cooling?"
- Materials include a range of embedded assessment teacher resources. In the *Teacher Textbook - Grade 1 Science* front matter, a section called Summary Steps breaks them down into four steps. Within each step is applicable assessment information. For example, in Step 1 - the *Learn By Doing STEAM Activity Reader Book*, the materials state, "Use the Online Library - Assessment Generator - before completing the related activities following each story, have the students verbally respond to Level 1 questions; discuss as a class. It provides teachers with information about what students know. TEKS, including TEKS 1, house the questions." Then, the materials state, "Complete the activities. Use the Level 2 questions for the science content taught and record results by students using the assessment matrix." It also states, "These reader books [*Learn By Doing STEAM Activity Reader Book*] include expository text, hands-on activities, and assessment tasks." The *Teacher Textbook - Grade 1 Science*, Field Trip section, states "the creation or use of the TPS assessment generator content, both formative and summative for student expectations."

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

- Materials assess all student expectations over the breadth of the course and indicate which student expectations are being assessed in each assessment. The Online Assessment Generator Grade 1 allows the teacher to choose which TEKS they would like to assess, and it provides the answers. For example, for TEKS 10.D, the question is, "If it was snowing, what would you expect the temperature to be like?" The multiple-choice answers are *warm, mild,* and *cold*. 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. The Benchmark Test tool available to teachers assesses all student expectations and indicates the expectations assessed at the top of each page.
- The 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 TEKS addressed and taught in that section or chapter are at the top of the page. It allows for quick reference and guidance for the teachers and students. For example, the Using Tools section has a step-by-step lesson plan and the TEKS that are the focus of the investigation at the top of each page in the book. In the *Assessment Guide - Grade 1 Teacher Edition*, the Earth and Space chapter, TEK 9 Earth and Space lists the multiple-choice questions.
- 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."

- In the *Student* and *Teacher Textbook - Grade 1 Science*, the materials indicate which student expectations are assessed by having the standard above each page. The Learn By Doing Assessment Rubric shows where teachers can find each standard assessment to demonstrate all standards coverage.

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

- 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 - Grade 1 Teacher Edition* organizes this content for all grade levels under the headings: Questions and Answers (1.1.E, F, G), Solving Problems (1.1.G), Working Safely and Responsibility (1.1.A, B, C), and Using Tools (1.1.D, E, F). 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 first-grade 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." The *Assessment Guide* contains activities integrating scientific concepts and science and engineering practices with recurring themes and concepts. In Matter and its Properties: Chocolate Molds, have students melt chocolate and observe the changes.
- Materials include assessments integrating scientific concepts and science and engineering practices with recurring themes and concepts. In the *Learn By Doing STEAM Activity Reader Book*, Chapter 5, Activity 7, students follow the scientific method to explore the movement of different objects. Materials include a rubric for teachers to follow and assess the students. In Chapter 8, students act like scientists to sort soil components in Activity 5. The assessment item for the same standard shows photos of three types of soil and lists the adjectives: dark brown, red, light brown, tiny particles, medium-sized particles, large-sized pieces, clumps, and smooth. The text states, “Question: Write words to describe the different soil types. Use the words listed below.” In Chapter 6, Activity 1, Collecting Rainwater, students will collect water using measuring cups, bowls, and a rain gauge. After using tools, the class will create a bar graph and write sentences about their findings.
- 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 4.B, the specific question is, "After reading chapter 5, ask the students the role of engineers in transport." The general question is, "Students can identify examples of scientists and engineers and what they do {sic}."
- In the *Teacher Textbook - Grade 1 Science*, the materials include assessments that integrate scientific concepts and science and engineering practices in the How can you use objects from

Earth? investigation. Questions provided include "to get the students started on their inquiry!" After the questions, they construct a model house.

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

- 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. For example, in grade 1, during the study of matter and its properties - heating and cooling, the students engage in an activity called In What Ways Can Water Change and What Happens to Materials When They are Heated or Cooled. The Assessment Guide provides a performance task that requires students to "Draw a flow diagram. Label the flow diagram. What is the process of making your favorite soup? What is the process to store it in portions in the freezer?" and then answer questions about the process. The performance task is separate from the lesson and requires students to apply knowledge and skills about heating and cooling and includes a rubric for scoring and summative questions.
- Students learn about seasons, day and night, and weather in Unit 4. The teacher will use a Sun-Moon-Earth model and discuss how day and night change as the seasons change. Students will observe and chart the weather. Next, students apply their knowledge of weather and seasons in the Earth and Space Performance Task. Under the Earth and Space Performance Task, students draw the season with the fewest hours of daylight and the season with the most. "Include observations of nature and weather that you might make each season, including what plants and animals are doing in those seasons." In the *Assessment Guide - Grade 1 Teacher Edition*, Organisms, and Environments, Performance Task, students will research the life cycle of humpback whales and how they raise their calves. Students will note key points and use them in a comparison table to find similarities and differences between humpback whales and humans in how they care for their young. In the *Assessment Guide* Science Assessment Questions section under the Performance Task Prompt, the "students' task is to look at a picture of someone dressed to perform a particular activity, such as a deep sea diver, and pick out the aspects of his/her clothing and equipment which mimic parts of an animal and the functions they serve."

TPS STEAM into Science Grade 1

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, such as in the *Teacher Textbook - Grade 1 Science*, which provides guidance in red text for evaluating student responses to every activity/question.
- The *Learn By Doing STEAM Activity Reader Book - Grade 1 Teacher Edition* contains sample student responses to questions investigated during a culminating activity for each content TEKS under the Assessment section. This component also includes the Learn by Doing Assessment Rubric - Grade 1 as a resource for evaluating student responses. Materials include an assessment question followed by sample responses that determine mastery. For example, the rubric provides teacher guidance for evaluating what students learned about tools. Students discuss how they would use tools to observe, measure, test, and compare. If students can only discuss 30% of the items, they have some proficiency.
- The *Assessment Guide - Grade 1 Teacher Edition* includes a Science Assessment Questions section with a scoring rubric that helps teachers evaluate students' responses to the performance task prompt. For example, in the Organisms and Environment Performance Task, students look at pictures of people wearing attire required for an activity, such as a scuba diver in scuba gear. Students determine which part of their clothing mimics parts of an animal and the

function they serve. Materials guide the teacher to use the four-point Scoring Rubric to evaluate students. A four-point answer requires "students exceed all of the required elements of the prompt." On this task, a score of four on the rubric requires students to include the following: "All the similar features are identified and labeled, including a description of the function of each feature in both natural and manmade roles."

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 - Grade 1 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.

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 - Grade 1 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 - Grade 1 Science*, the *Student Journal - Kindergarten Science*, the *STEAM Activity Guide – Grade 1 Teacher Edition*, the *Assessment Guide - Kindergarten Student Edition*, and the Intervention Focus Tutorial. For example, in the *Learn By Doing STEAM Activity Reader Book*, Chapter 2, students have six activities to explore their learning and practice vocabulary. In Activity 4, "Students will investigate and describe the use of energy in the form of heat in daily activities." In Activity 6, students will practice and review vocabulary words. However, materials lack guidance on how to leverage activities for students below level.
- The *Teacher Program Guide - Grades K-8 Science* offers some 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 - Grade 1 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 – Grade 1 Teacher Edition* should be used for level 1 students who score Some proficiency on the Learn By Doing Assessment Rubric.

TPS STEAM into Science Grade 1

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 - Grade 1 Teacher Edition.*
    - For example the summative assessment, Benchmark Test 2, Earth and Space, states: "Name 3 ways that humans use water in their everyday lives."
    - For example, in the *Assessment Guide - Grade 1 Teacher Edition,* open-ended questions in the formative assessments for the Earth and Space unit are scientifically accurate. One item asks: "What kind of observations can you use to compare how many hours of daylight there are at different times of the year?"

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

- Assessment tools often use unclear pictures and graphics and lack realistic photographs to assess student learning. The Assessment Database uses clipart images in assessment items that make the content presented and required tasks unclear to Grade 1 students.

  - For example, when asking, “Which thing feels smooth?” materials include unlabeled clipart images of a brick, an unidentifiable object that resembles a screwdriver, and a warped mirror.
  - In another assessment item, the materials state, “Look at the picture. What is the animal doing?” The item includes a clipart image of a large car on the tan ground near the water. The materials do not include an animal in the graphic.
  - Some images in assessment items do not accurately represent real-life objects. In question 185 of the 5C theme, students are asked to order images based on size, but the pictures provided are small and unlabeled, making it difficult to complete the task.
- The *Assessment Guide - Grade 1 Student Edition* contains some pictures and graphics, with most of the material being text-based and not developmentally appropriate. Some items use simplistic clipart. In the lesson on Heating and Cooling, the What Have You Learned? segment requires students to fill in the missing written word in a table with arrows showing the flow of the water cycle. There are no pictures to support students in the task.

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 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 #3 states, “What would you do if you wanted to find out how many daffodils you have in your garden?” while #48 says explicitly, “Work alone. Name the object that provides Earth with light and heat.” Another item, #49, tells students to work with a partner.
- The *Teacher Program Guide - Grades 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 - Grade 1 Teacher Edition*, 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 - Grade 1 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 1

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 on-level question asks, “What question might you ask to find out about the plant life cycle?” The below-grade level question is the same but adds multiple-choice options.

TPS STEAM into Science Grade 1

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 - Grade 1 Science*. For example, in the *Teacher Textbook - Grade 1 Science*, the lesson on an investigation over How Many Parts Make a Whole? includes a section titled Support. "Students may need more practice using building blocks to understand that an object has parts that can be built and taken apart without breaking the whole." Materials suggest using a pizza model to help students understand.
- Materials also include a Scaffolding section for each lesson in the *Teacher Textbook - Grade 1 Science*, which lists previous and future TEKS to be used for supporting students with gaps in grade-level knowledge and a Support Matrix Document listing resources that align with each standard. In the Learn by Doing Scope & Sequence, RTI materials provide recommended targeted instruction and activities for each lesson from the STEAM storybooks.

Materials provide enrichment activities for all levels of learners.

- Materials provide enrichment activities for all levels of learners that account for learner variability. In the *STEAM Activity Guide - Grade 1 Teacher Edition*, the students work in small groups to discuss how people use light, heat, and sound. After students read Amelia Rose Explores, students make a mind map and are encouraged to use newly learned vocabulary words.
- Materials provide teacher guidance that encourages 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 Rock Hard project, students make concrete to help understand how our natural world provides materials for useful products. Students gain experience in observations, measuring, and mixing. They also see how fossils are formed.
- Materials provide teacher guidance that encourages all learners' exploration and application of grade-level science knowledge and skills by applying new learning via various activities in the *Learn By Doing STEAM Activity Reader Book*. In Chapter 4, Who Shut That Door? students first read about magnets and magnetism. Four activities follow the reading aligned to the content: an experiment to determine which materials are magnetic, a math graphing activity, a drawing activity, a mapping activity, and a vocabulary activity.
- Materials provide a variety of enrichment activities for all levels of learners. In the *Teacher Textbook - Grade 1 Science*, in the Project Based Lessons in the back of the book, 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 Activity Guide by integrating mathematical practice. The *Teacher Textbook - Grade 1 Science* offers several opportunities for hands-on investigations and experiments that extend learning. There is an investigation into heating and cooling. The *Teacher Textbook - Grade 1 Science* has opportunities to connect science to math and literacy at the end of each unit.
- The *Teacher Textbook - Grade 1 Science* Earth and Space unit, Water Trial Lesson states, "Advancement: Have students research and create graphs to show the number of floods in Florida this century." Again, in the *STEAM Activity Guide,* Earth and Space unit, there is a Natural Science Activity that states, "This activity is for advanced students only." The Activity has students explore the daylight hours during different seasons. It states, "Ask students: Did you know Earth is tilted as it moves through space? Say to students: Returning to the globe we used earlier, remember that Earth spins on its axis. Look at the picture and notice the tilt. In Earth's history, the tilt is 23.5 degrees off vertical."

TPS STEAM into Science Grade 1

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 - Grade 1 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 3 in Chapter 4 Who Shut that Door? states: “Ask the children what they think opposite means and to provide an example. Provide the children with magnets and ask them to predict what would happen when the same sides were placed close together and the opposite sides together. Ask them to describe the movement that was caused by the magnet placement.” 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 - 1st Grade Teacher Edition,* teachers are instructed to “use the DVD and find information about one animal to show its properties and how it moves. Create a classroom chart to show the information”.
- The materials 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 1

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*, Chapter 2, Louis's Thirsty Story has the teacher demonstrations with the ice cube experiment, real-world connections, and measuring and collecting data. The *STEAM Activity Guide* has various instructional approaches to engage students. The teacher does classroom demonstrations; 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* and *STEAM Activity Guide*. Chapter 9 includes a teacher think-aloud in the idea boxes. Idea box 3 states, “Mind map with the class how different animals might be adapted to their environment by their physical structure and relate it to where they live, what they eat, and how they move.” The chapter also includes opportunities to problem-solve with teacher support in idea box 1 when it says, "Ask the children what they think happened." The chapter provides exploration with concrete and hands-on materials at the level of rigor for the course when students observe live fish in Activity 5. The *Learn By Doing STEAM Activity Reader Book* lesson, What's the Matter,

includes opportunities for students to engage in inquiry-based learning activities in a collaborative setting to dissect food and determine the properties of each component. The lesson consists of authentic tasks in which students use tools to measure and collect data about the food item.

- 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 will use a hand lens to sort matter according to its physical properties. Students will decide whether to group by weight, shape, color, or texture. In the *Teacher Textbook - Grade 1 Science*, in the chapter on Heating and Cooling, students engage in various instructional approaches. In the introduction portion of the lesson plan, students observe water in its different forms and discuss the differences. Next, students will complete textbook work that consists of answering questions. The lesson continues, and students work on an investigation. Students will predict what will happen to a balloon filled with water and frozen. They will draw and write the outcome.

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 *Learn By Doing STEAM Activity Reader Book* lesson, What's the Matter, has students working in small groups to dissect a food item and conduct investigations to determine the properties of each ingredient. The Amelia Rose Explores: Earth and Space lesson has students work with partners to practice vocabulary words. In the Natural Science: Heat lesson, the teacher demonstrates how heat changes an egg and cannot revert back in the *Learn By Doing STEAM Activity Reader Book*. The teacher reads the stories to the whole group. In Chapter 6, the teacher reads Where Did All the Rain Go? to the whole group. Students work in pairs to complete Chapter 6, Activity 6, in which the students investigate erosion using a stream table. In Chapter 5, Activity 4 allows students to work individually to write about different water sources.
- Materials consistently support flexible grouping. The *Teacher Textbook - Grade 1 Science*, Force, Motion, and Energy chapter divides the students into small groups or pairs. Students then plan and investigate how different objects move. In the *Teacher Textbook - Grade 1 Science*, Organisms and Environments, Science is a Verb section, students discuss what they have learned and decide how to effectively communicate their learning with the public. Presentations are delivered individually or in small groups.

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:
    - The Movement in the *Teacher Textbook - Grade 1 Science* lesson plan shows teacher modeling, guided practice, and working in groups and independently but lacks guidance and structures to achieve effective implementation.
    - The Support Notes for Teachers in the *Teacher Program Guide - Grades K-8 Science* detail how the program begins with the *Learn By Doing STEAM Activity Reader Book* that

teaches literacy with science. Then, teachers are to use the textbook, including expository text, investigations, assessment materials, and literacy and math-connected challenges. The *STEAM Activity Guide* provides aligned STEM and arts activities and an engineering practice project. The Support Notes for Teachers 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. However, the teacher materials do not specify how the program supports modeled, guided, and collaborative practice.

- In the *Learn By Doing STEAM Activity Reader Book*, Chapter 6, Activity 6, students investigate erosion using a stream table using independent and collaborative practices. The only guidance provided is to remind children to listen during the discussion of results actively. This reminder is consistent throughout the materials but only supports the implementation of active listening. The *Teacher Program Guide - Grades K-8 Science*, Program Introduction states that teachers should assess students using Level 1 and Level 2 questions from the Online Library Assessment Generator. "If students accurately answer either or both questions, then once the textbook content that follows has been completed, it is highly likely that the science content has been mastered."

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

- Materials represent diversity in communities. The *STEAM Activity Guide - Grade 1 Student Edition* has a diverse representation through images and information. Throughout the Amelia Rose stories, there are males and females and different races represented.
- Materials represent diverse communities using images and information that are respectful and inclusive. The illustrations of the *Learn By Doing STEAM Activity Reader Book* represent diverse communities. Chapter 4, Who Shut the Door? shows an image 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 tan skin. The same characters are found in the reader's stories, as well. A diverse group of students that represent multiple ethnicities is on the cover of the *Learn By Doing STEAM Activity Reader Book*.
- Materials represent diverse communities using images and information that are respectful and inclusive. In the Online Library - Scientists - Blackline Master K-8, there is 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. The Online Library of Scientists contains fact sheets for many 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.

TPS STEAM into Science Grade 1

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 supports as a feature of each lesson in the *Teacher Textbook* 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 (English Language Learner) header at the end of each lesson in the *Teacher Textbook - Grade 1 Science.* For example, in the Grade 1 lesson, Tools, 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* offer similar suggestions for supporting emergent bilingual students. For example, the Grade 1 lesson, Properties, directs teachers to "Ensure that students understand the meanings of each category you have created in the investigation. Offer help with writing the names of objects they find where necessary." The Patterns lesson offers the suggestion: "Check students' vocabulary relating the weather and the seasons and have students learn any new terms they need to." 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 - Grade 1 Teacher Edition*. For example, at the beginning of "Amelia Rose Explores Matter and Energy," materials provide a table with several "cross-curricular second language acquisition/learning strategies," including the following: "Use prior knowledge and experiences to understand meanings in English; Use prior knowledge to understand meanings in English; Use prior experiences to understand meanings in English." 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 - Grade 1 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."
- Materials encourage the use of students' first language in a suggestion under the Tips for ELL Students header in the *STEAM Arts Project Guide K-12* Grade 1. This suggestion pertains 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 1

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 - Grade 1 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 - Grade 1 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 provide information for teachers to share with families/caregivers to help reinforce student learning and development. The Family/Caregiver Program Guide provides some resources and strategies for caregivers to reinforce student learning and development. It states, "Parents/caregivers can help enforce some of the requirements of the TEKS at home. The work you can complete with their 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 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, the document provides the strategy, “Ask the students to define specific words and demonstrate them with an action or an example in a sentence.” Additionally, the Force, Motion, and Energy Lesson states, "At Home: Play with toy vehicles with your child, encouraging them to describe how they are moving using words such as in a straight line, zigzag, up and down, back and forth round and round, fast and slow."
- Materials provide some digital resources that teachers can share with families to reinforce learning and development. According to the Family/Caregiver Guide Grades K-8, in the Program Introduction, "TPS Publishing Inc. provides parent digital access for families to all homework assignments and the lists of keywords and definitions.”

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.”
- 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 1

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.

- Materials include a grade-level TEKS-aligned Scope and Sequence in the Online Teacher Support. The Scope and Sequence in the Teacher Support Guide lists each unit, summarizes that unit, lists the number of class periods and textbook reference pages, and lists the grade 1 TEKS that align with each unit. For example, in Unit 2, Matter and Energy, TEKS 1.6.1, 1.6.B, and 1.6.C are listed, and the Scope and Sequence states that the skills are covered over 30 class periods with four days for reteaching and revision.
- Materials include vertical alignment at the beginning of every chapter. For example, the Scientist section in the *Student Textbook - Grade 1 Science* contains the vertical alignment for TEKS 4A and 4B with scaffolding information that explains what the students should have learned previously and what they will learn in grades 2–5.
- Materials include sequence outlining in the Pacing Plan/Year Planner with a calendar of dates to complete each lesson.

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 For example, 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 - Grade 1 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.

- The Science is a Verb category in the *Teacher Textbook - Grade 1 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 How Do You Group Objects? Some questions include: "How do you find out if something sinks or floats?" and "How can we compare these objects using relative size and quantity?" Additionally, teacher guidance states, "In today's lesson, students will collect information or data…Explain to students how the data collected in today's lesson may be represented in the forms described above." For each set of questions there is guidance in the Additional Hints section.
- Teacher guidance in the *Learn By Doing STEAM Activity Reader Book - Grade 1 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 its dependence on its parts to be fully functioning," and "Systems provide an opportunity to review cause and effect, for example, a car which is a sum of its parts."

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. Neither the Scope and Sequence nor Pacing Calendar references spiraled TEKS for review or core concepts for reteaching.
- 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 - Grade 1 Student Edition* to support mastery and retention. For example, in Chapter 1, Mee's Birthday Lunch, six different activities promote mastery and retention of the content. activities provide review and practice of knowledge and skills taught within the chapter but not spiraled throughout the year.
- Materials include project-based lessons that incorporate multiple standards, including some previously taught. For example, the Heating and Cooling lesson includes two different investigations called Ice and Steam and Jar of Hot Water.
- Materials include review and practice in the *Student Textbook - Grade 1 Science,* including focus questions that incorporate content from the lessons. For example, the Earth and Space unit asks, "Where is air? How do you know that air is there? What is wind? How do you know that wind is there? What can wind do?"

TPS STEAM into Science Grade 1

Indicator 8.2

Materials include classroom implementation support for teachers and administrators.

1	Materials provide teacher guidance and recommendations for 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 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 - Grade 1 Science* contains an overview of the components similar to the *Teacher Program Guide*. When the lessons begin, an overview guide lists the TEKS taught, scaffolding information, objective, 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 - Grade 1 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 design engineering 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 - Grade 1 Science*, the TEKS for each lesson is listed on the top of each page. For example, in the lesson Properties, TEKS listed is 6.A at the top of the page. The *STEAM Activity Guide - Grade 1 Teacher Edition* incorporates science with 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.
- In the *Learn by Doing STEAM Activity Reader Book - Grade 1 Teacher Edition,* materials detail the ELA/literacy and mathematics connections but do not identify the aligned reading or math standards. For example, for the story Kevin Loves Soccer, materials include science standard 1.7B and list three ELA/literacy connections and three mathematics connections but do not include the ELA and Math TEKS.
- The materials include an Essential Content Guide in the *Learn By Doing STEAM Activity Reader Book - Grade 1 Teacher Edition* that has cross-content connections for ELA, math, and social studies without specific standards listed. This guide contains the chapter information and the content taught across science, math, and English language arts. For example, Chapter 8 addresses the basic needs of plants and how they depend on other living and nonliving things. During this lesson, place value and design are taught.

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

- Materials provide a comprehensive list of equipment and supplies needed in the STEAM into Science Grade 1 Textbook Kitting List, which alphabetically lists all required materials to complete activities and investigations. In the online teacher supports, the materials listed for the program are under the STEAM Science Kitting/Materials Catalog. There is also a grade level list under the STEAM Science Kitting/Materials List Grade 1.
- Materials are listed for each lesson. In the *Teacher Textbook - Grade 1 Science,* with each part of the lesson, there is a list of materials needed for that section. For example, in the In What Ways Can Water Change? lesson, there is a required list of materials needed for that lesson under the description.

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

- Materials include guidance for safety practices. For example, in the *Scientific, Investigation and Reasoning Handbook – Grade 1*, the first lesson is titled Working Safely and Responsibly, which reviews how to behave safely in science lessons.
- The *Learn By Doing STEAM Activity Reader Book - Grade 1 Teacher Edition* includes a section titled Safety in the Classroom. It directs teachers to follow state and school safety guidelines.

TPS STEAM into Science Grade 1

- In the *Learn By Doing STEAM Activity Reader Book - Grade 1 Teacher Edition,* there is a paragraph about safety. It is a general reminder to demonstrate safety practices as described by TEA and to follow school and district guidelines before conducting any investigation.

TPS STEAM into Science Grade 1

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 Grade 1 states that it provides an “alternate scope and sequence for 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 - Grade 1 Science* has a Scope and Sequence and a pacing calendar available. It also contains the recommended length of time for each lesson. 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 - Grade 1 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 - Grade 1 Teacher Edition* contains an essential content guide. The guide shows that the material begins with Unit 1, Mee’s Birthday Lunch, in which students learn about

matter and classification. This builds into other units, such as Unit 2, Louis's Thirsty Story, in which students study the physical forms of water.

- 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 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 – Grade 1 Teacher Edition* 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 1

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 1st Grade program are more word-based than picture-based, which does not support learning for non-readers.
    - For example, the *Student Textbook - Grade 1 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, pages following traditional lesson, Tools, in the *Student Textbook - Grade 1 Science* present a table of keywords, which appear in bold, with single-spaced definitions. These pages present forty-one key words across five pages and lack an appropriate amount of white space and a design that supports learning for Grade 1 students.
    - For example, following the Name the Scientist lesson, the What Have You Learned? page appears to be intended as a summary of key points for students but lacks formatting, text, and graphic features to grab student attention. It contains ample white space but lacks spacing between introductory information and student tasks.
    - Chapter titles in the *Learn By Doing STEAM Activity Reader Book - Grade 1 Student Edition* do not always identify the topic, and the topic is not identified elsewhere. For

example, Chapter 1 is titled Mee's Birthday Lunch and Chapter 2 is titled Louis' Thirsty Story.
    - 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.

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 *Student Textbook - Grade 1 Science* uses many small clipart icons but lacks real-life photographs to enhance student learning. In the Parent and Young section, materials show a clipart picture of a horse and a smaller horse for students to compare parent and young. The textbook also lacks realistic or real-life photographs of erosion to support Grade 1 students in understanding the connections between water and land.
    - For example, some pages in the Amelia Rose Explores Matter and its properties section of the *STEAM Activity Guide - Grade 1 Student Edition* do not have any pictures or graphics to support student learning and engagement.
    - For example, in the *Learn By Doing STEAM Activity Reader Book - Grade 1 Student Edition*, materials present clipart images of a lion, rocks, a drop of water, a butterfly, a cartoon person, and a single-color leaf coming out of something green in an assessment requiring students to identifying living things.

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 - Grade 1 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.

TPS STEAM into Science Grade 1

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 – Grade 1 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.