TPS STEAM into Science Grade 3

TPS STEAM into Science Grade 3 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 3	100%	100%	100%	100%
Grade 4	100%	100%	100%	100%
Grade 5	100%	100%	100%	100%

Section 2. Instructional Anchor

- The 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.
- The materials somewhat 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 somewhat 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 somewhat promote students' use of evidence to develop, communicate, and evaluate explanations and solutions.
- The materials provide some 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 somewhat clear and easy to understand.

Section 7. Supports for All Learners

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

Section 9. Design Features

- The visual design of materials is not clear and easy to understand.
- The materials are not intentionally 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 provide support for learning.

Section 10. Additional Information

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

TPS STEAM into Science Grade 3

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 recurring themes.	M
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, plan and conduct classroom, laboratory, and field investigations, engage in problem-solving to make connections across disciplines, and develop an understanding of science concepts.	M

Meets | Score 4/4

Materials meet the criteria for this indicator. 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.

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 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 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.

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.

- Grade 3 materials in the *Learn By Doing STEAM Activity Reader Book Teacher Edition* include opportunities for students to practice, develop, and demonstrate mastery of grade 3 scientific and engineering practices (SEPs) as outlined in the TEKS. For example, a lesson on ecosystems provides opportunities for students to build terrariums and investigate the effect of too much or too little water on plant life. This experience supports students in planning and conducting investigations using the Scientific Method to answer a question and analyzing and interpreting data to derive meaning. They also provide opportunities for students to practice, develop, and demonstrate mastery of the SEPs as outlined in the TEKS. Opportunities include, for example, Science Is a Verb (SIAV) and a lesson found in the *Teacher Textbook* to provide teacher guidance

as students evaluate how some plants adapt to change better than others using inquiry. Also, students use scientific practices to conduct a descriptive investigation, collect observations and measurements, and analyze data to derive meaning.

- Through the narrative in *Learn by Doing STEAM Activity Book* Chapter 6, a character introduces a building challenge, materials, and general criteria. The narrative also mentions the students pre-testing, redesigning, and engaging in a final testing phase. The Grade 3 materials include opportunities for students to develop a model of the Sun, Moon, and Earth to demonstrate the bodies' movement. The students create a physical representation of each body, ensuring the Earth and Moon are able to rotate and revolve. The introduction section includes a section titled Scientific Method, where the materials provide a diagram linearly depicting steps in the process. The subsequent text provides guidance for teachers to further explain each step in the diagram. Portions of this explanation address Scientific and Engineering Practices (SEPs), in which students are expected to ask questions and conduct investigations.

Materials provide multiple opportunities to make connections between and within overarching concepts using the recurring themes.

- Materials identify overarching concepts using recurring themes and show how they connect within the materials Materials also include opportunities for students to make connections within overarching concepts using the recurring themes. For example, a lesson on ecosystems in the *Learn By Doing STEAM Activity Reader Book Teacher Edition* provides teacher guidance to support student understanding of systems and the interdependence in the function of the system as demonstrated in the TEKS. For example, students investigate cause and effect relationships and how they are identified and explain the change during a grade 3 lesson on ecosystems.
- The lesson on energy in the *Teacher Textbook* demonstrates students investigating the overarching concept of energy. For example, in grade 3, students know energy is everywhere and can be observed in cycles, patterns, and systems. Students explore different forms of energy, including mechanical, light, sound, and thermal in everyday life. The lesson on environmental changes in the *Teacher Textbook* demonstrates students investigating patterns, cycles, systems, and relationships within environments. For example, in grade 3, students also describe how changes in the environment cause some organisms to thrive, perish, or move. The lesson on "Earth's Changing Surface" from the *Teacher Textbook* demonstrates students investigating the overarching concept of modeling Earth processes. For example, in grade 3, students create models of volcanoes that change the Earth's surface.

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

- 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 ecosystems in the *Learn By Doing STEAM Activity Reader Book Teacher Edition* contains Idea Boxes that explain, describe, and make connections to develop conceptual understanding. The materials strategically develop students' content knowledge and skills for third graders. The scientific and engineering practices (SEPs) are integrated into investigations so students can build and connect knowledge and apply it to new concepts. For example, in a lesson on the survival of plants and animals in an ecosystem, materials provide teacher guidance about

common preconceptions students have about animals. Student text provides multiple examples of animals that migrate or hibernate.

- The materials focus on recurring themes, specifically unpacking systems in the Introduction, creating and evaluating models, and identifying patterns and data using input-output tables. The materials arrange concepts to explore systems such as the bodies in the Solar System. The content begins with a big-picture view of the system and then zooms into addressing specific components. The progression from chapter to chapter is also arranged to connect content with previous content. For example, the study of the water cycle follows the introduction to the solar system. The *Teacher Textbook* includes a Project-Based Lesson describing the integration of SEPs into a project-based learning format. The materials offer a general description, such as "Research on a problem should be carried out before beginning to design a solution." but do not apply content.
- Materials in the *Teacher Textbook* lesson plan on Energy provide teachers with guidance to enhance student learning using scaffolding information, background text, common misconceptions, teacher tips, and support suggestions for special populations. The *Teacher Textbook* also demonstrates how the content is designed to develop and build student content knowledge with the presence of a Scope and Sequence explaining how the program is structured, showing how students are able to make connections across units.

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

- The *Learn By Doing STEAM Activity Reader Book Teacher Edition* includes opportunities for students to engage in problem-solving to make connections across disciplines and develop an understanding of science concepts. For example, grade 3 students make connections between science and math when they use multiplication and division skills to find an unknown, analyze data about ecosystems presented in a bar graph, and create a bar graph using a provided data set. Students determine how many crickets are needed to feed a given number of frogs or determine how many frogs a given number of crickets can feed. The students then analyze a bar graph representing the population data in a particular ecosystem and finally create a bar graph using different population data. Materials also include opportunities for students to engage in problem-solving to make connections across disciplines and develop science concepts. For example, grade 3 students make connections between science and literacy after they have studied the adaptations of different animals and plants and are challenged to explain the adaptations of a newly discovered plant and animal from a specific type of ecosystem.
- The materials allow students to practice Scientific and Engineering Practices (SEPs) by designing solutions and investigating the efficiency of the design. The activity in the *Teacher Textbook* asks students to examine designs to quickly remove oil from animal feathers. The students test each prototype, and record observations to determine which model removes the most oil. The materials provide opportunities for problem-solving in every unit across the grade level. The materials present students with a challenging engineering design process through the text. The materials also provide criteria with which to evaluate their prototype as well. For example, in Chapter 6, the materials provide multiple opportunities for students to apply their understanding of defining a problem, generate solutions based on criteria and within constraints, and conduct a fair test to evaluate their prototype.
- The *Teacher Textbook* provides sufficient opportunities for students to ask questions and plan an investigation. For example, the lesson on forces and motion provides a set of guiding

questions the teacher can ask to help students investigate Newton's first two laws of motion with simple machines. After the investigation, students prove Newton's laws with a demonstration and explanation to the class. The STEAM Activity Guide provides opportunities for students to conduct investigations and engage in problem-solving to make connections across disciplines. For example, in the activity "Crank it Up," students construct cranes and scales to measure the force it takes to lift an object, following a set of guided instructions. Students then answer questions to make real-world connections between science and math concepts.

TPS STEAM into Science Grade 3

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

Partial Meets | Score 2/4

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

Materials partially embed phenomena and problems across lessons to support students in constructing, building, and developing knowledge through authentic application and performance of scientific and engineering practices, recurring themes and concepts, and grade-level content as outlined in the TEKS. Materials intentionally leverage some students' prior knowledge and experiences related to phenomena and engineering problems. Materials clearly outlined for the teacher some of 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 utilize phenomena intermittently throughout the program. Materials do not carry out the investigation of phenomena and problems across lessons.
- For example, the *Learning by Doing STEAM Activity Reader Book* does not explicitly state the anchoring phenomenon but instead launches directly into the change to the land. An example in grade 3 Chapter 7 includes images, facts, captions, and texts. The chapter continues to address conservation, fossilization, and properties of soil. The characters, a presenting teacher, and a class of students are the only common components carried throughout the chapter or any of the activities. The materials provide a phenomenon statement at the beginning of the Project Based Lesson. The grade 3 example from Earth and Space in the *Teacher Textbook* is "Obtain and combine information to describe that energy and fuels are derived from natural resources. . ." The content is continued throughout the chapter but does not act as an anchor. Chapter 6 includes "Design Engineering Challenge – Earthquake" with a diagram to support teachers and students. Students previously followed characters through the design process and had the

opportunity to apply their learning. In the following activities, students develop a landform, evaluate the damage due to the earthquake, and communicate their findings. Students model landslides and earthquakes based on their reading of the Chapter 6 materials. In Chapter 6, Activity 5 students research a volcanic event, this is related to the concepts covered in Chapter 6. In Chapter 6, Activity 2, the students define a problem and build a solution using the design engineering process.The materials provide an opportunity for students to develop, evaluate, and revise their thinking as they engage in phenomena when studying how organisms respond to environmental changes. During the discussion portion of the lesson, students look for patterns in the data shared from the research to determine the types of organisms, but that survive, perish, or move on. Materials embed a culminating activity for students to consider the life cycles of different organisms as they present their research about a specific animal through art. In the *Learn by Doing STEAM Activity Reader Book*, Chapter 6, students model landslides and earthquakes based on their reading of the Chapter 6 materials. In Chapter 6, Activity 5, students research a volcanic event. This is related to the concepts covered in Chapter 6. In Chapter 6, Activity 2, page 91, the students define a problem and build a solution using the design engineering process.

- Students engage in phenomena when studying how two materials can be combined to form a stronger mixture. During the investigation and discussion portion of the lessons, students make predictions about what material would make a stronger bridge. Students then discuss how engineers use mixtures to create stronger bridges.

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

- The engineering design process and details for phenomena being studied in this grade is first taught and applied in Learn By Doing. The Teacher Textbook content provides Science is a Verb (SIAV) investigations, expository text, and matching activities, followed by STEM and Arts projects in the STEAM Activity Guide. Assessments then appear in the assessment guide and assessment generator. Prior knowledge and experience is present for phenomena and engineering.
- Students make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents. Students first research where windmills are used, then students build a model of a windmill describing the flow of energy, finally, students describe the flow of energy in their homes. Students use their prior knowledge of tools and materials to build a device (the windmill), identifying the different types of energy, and identifying materials that are conductors and insulators.
- Materials provide teacher guidance about potential student misconceptions, but the guidance is directed towards the science concepts in general, rather than misconceptions related to the phenomenon. For example, materials provide teachers guidance at the beginning of each unit, titled "Common Misconceptions" to help gauge where some students may have inaccurate prior knowledge. The sections also inform teachers of the necessary prerequisite content and skills students need to be successful. For example, in the lesson on Mixtures, the common misconceptions list detailed explanations of the meaning of a mixture. Materials do not provide teacher guidance about common misconceptions related to bridge construction, the engineering problem for the unit.

TPS STEAM into Science Grade 3

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

- Materials outline for the teacher the scientific concepts and goals behind some phenomena and engineering problems in some resources. For example, in the lesson, “The Impact of Natural Earth Processes on Humans,” the materials provide vertical information, scene background, and common preconceptions related to the goal. The materials contain guiding materials addressing each student’s goal, the related phenomena, and additional examples. The materials also provide guiding questions to support instruction. The materials offer several Anchoring Phenomena in the Instructional Segment: States of Water, a Vignette within the STEAM Activity Guide. The example addressing Organisms and Environments states, “Natural Systems proceed through cycles that humans depend upon, benefit from, and can alter.” The following materials direct students through activities addressing the phenomena through demonstrations, investigations, developing models, and research. However, the related text in *the Learn by Doing STEAM Activity Reader Book* does not follow a similar format, identify a phenomenon for study, or clearly outline the goals before launching into reading material describing a wide range of science concepts. The storytelling component includes phenomena, but there is no identification of the phenomena or teacher support for the phenomena presented in the storytelling component.
- The materials outline the scientific concepts behind the phenomenon that identifies the vertical alignment across grade levels. Specifically, the phenomenon is reflected when students ask questions and predict outcomes about the energy changes that occur when objects collide. For example, in a grade 3 lesson on energy, materials leverage the phenomenon in the previous grade focusing on how to plan and conduct investigations to design an investigation on the effects of mechanical energy. Materials provide a “Background Information” section that outlines overarching learning goals for each phenomenon and engineering problem addressed. The explanation unpacks the meaning of the scientific idea, so teachers can understand how to help students reconstruct the idea. For example, in the Science is a Verb (SIAV) lesson on circuits, the background section explains why the power source of a circuit is a battery instead of the circuit being plugged directly into an outlet.

TPS STEAM into Science Grade 3

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.	PM
2	Materials are intentionally sequenced to scaffold learning in a way that allows for increasingly deeper conceptual understanding.	PM
3	Materials clearly and accurately present grade-level-specific core concepts, recurring themes and concepts, and science and engineering practices.	PM
4	Mastery requirements of the materials are within the boundaries of the main concepts of the grade level.	PM

Partial Meets | Score 3/6

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

Materials are somewhat 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 some learning in a way that allows for increasingly deeper conceptual understanding. Materials clearly and accurately present some grade-level-specific core concepts, recurring themes and concepts, and science and engineering practices. Some of the mastery requirements of 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 introduce content through the text in the *Learning By Doing* Student Reader. Materials do not explain how grade 3 learning goals for activities in the *Learning By Doing* Student Reader connect to previous learning goals in grades K-2. Student Reader Texts provide some background connections through the use of idea box prompts and dialogue. The narrative prompts students to think of examples demonstrating content, prior learning, or potentially other units. The text uses a story-based approach where character dialogue introduces, teaches, and connects content. Idea boxes may also address the content. The first lesson component in the *Learning By Doing* text begins with a setting description and the teacher character asking students to describe what is occurring. For example, after a power outage, the text says, "Mr. Morales asked the children if they could explain what energy was." A student character answers yes and provides a definition. Materials do provide some scaffolding information in traditional lessons in the Teacher Textbook.
- Materials list “future learning” within the vertical progression for some lessons. Materials do not list or describe what future learning skills and knowledge the lesson includes. The Vertical Integration Table for the *Learn By Doing STEAM* activity reader provides citations for lessons that include specific TEKS and shows the TEKS across grade levels, however, it does not

reference specific learning or activities and educators would need to look through past or future grade level materials to determine how concepts were taught.

- In the grade 3 Teacher Textbook, the traditional lessons provided include some scaffolding information at the beginning that outlines how the standard builds upon work students have covered on a topic in previous grades and how future study builds upon the grade-level TEKS being covered in the lesson. TPS includes PBL, STEAM Activities, and Vignette lessons in addition to traditional lessons. For example, a lesson on solids, liquids, and gases details how students compare and classify the properties of objects in grades K-2 by listing the specific grade-level TEKS and showing the progression of learning in grades 4-5, again by listing the specific grade-level TEKS. Another example of the connection shown is in the teacher's directions from this lesson prompting students to remember some of the physical properties learned in grade 2, such as flexibility, in a lesson on properties. Materials connect new learning to previous and future learning within the grade level. For example, in the *Learn By Doing STEAM* Activity Reader Teacher Edition, materials include documents that address what is being taught in each chapter and the connections to math and ELAR.
- In Chapter 4 titled “The Sun, Solar System and the Weather” of the *Learn By Doing STEAM* Activity Reader Teacher Edition, some of the activities provided for students connect to previously taught core concepts from the grade level. For example, Activity 6, “Heat, Energy, Movement,” connects students to previous learning about observing and recording changes in states of matter as they explore the transfer of heat energy after previous activities looking at weather data.

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

- Materials include a section describing how the resources should be used. Many lessons do not utilize a concrete-representational-abstract sequence. Some lessons do begin with fundamental concepts and increase in complexity.
- The Program Guide describes the lesson progression with each resource. The guide explicitly states teachers begin each unit with the *Learning By Doing* Reader and then move to the exploration in the Teacher Textbook. The *Learning By Doing* reader introduces all chapters with fictional characters asking and answering questions. Materials intentionally provide content information before students move to exploration. The Lessons plans included in the Teacher Textbook 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.
- For example, in a grade 3 lesson on mixtures, students first read about mixtures and respond to questions about the text (representational), then investigate by mixing different materials together (concrete), and finally apply what they have learned (abstract reasoning). Materials include a progression that places representational learning before concrete learning when presenting concepts for student learning. For example, in Chapter 1 “Sink or Float” of the *Learn By Doing STEAM* Activity Reader Teacher Edition, instruction begins with an expository text about physical properties before moving into activities conducting experiments to test an object's ability to sink or float.
- The Teacher Textbook provides a limited progression of concrete and then representational before abstract reasoning when presenting the concept of solids, liquids, and gases through an activity and art project. Students read a narrative story about bath water and how it takes many different shapes and states. Students complete one of three activities with observations about

the states of water and how that affects their shape. After the activity, students use die-cut jars and circles to represent each state of matter; solid, liquid, and gas. Students do not use abstract reasoning to allow 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.

- Materials present some grade 3 core concepts, recurring themes and concepts (RTCs), and science and engineering practices (SEPs) clearly. The *Learn By Doing STEAM* Activity Guide Teacher Edition provides teachers with a script that leads students through the scientific method including hypothesizing, materials and methods, results, analyzing and discussing results, and conclude for an activity. In one lesson, students investigate cars and ramps. Within the analysis and discussion of results paragraph, materials state, “Look at the variability in the student’s data and analyze data by identifying significant features, patterns, or sources of errors.” Materials do not clearly state how the teacher's action connects to a core concept, recurring theme, or science and engineering practice. The Teacher Textbook provides teachers with “Science Reference Points” that connect to student activities and investigations found in the Student Textbook. These reference points imply SEPs.
- Materials accurately most grade-level specific core concepts and SEPs. For example, a grade 3 lesson on weather found in the Teacher Textbook includes instructional opportunities for students to compare and describe day-to-day weather in different locations by collecting and analyzing data from a reliable internet weather source. Students record weather data that includes temperature, wind conditions, and precipitation for multiple days in an assigned location from different parts of the US.
- The Teacher Textbook does not clearly provide guidance on instruction related to SEPs. For example, materials state, “Generate and compare multiple solutions to a problem based on how well they met the criteria and constraints of the design solution.” Further down it states, “Evidence for this key concept can be found in the Investigation activity and the Research Lab “What’s a Rocking?” Materials do not state how teachers use “Science Reference Points.”
- Materials go beyond grade-level specific core concepts. For example, a grade 3 lesson on force and motion includes an activity for students to identify different types of simple machines found on a playground which goes beyond the scope of the TEKS which is to demonstrate and describe forces acting on an object in contact or at a distance. The vocabulary of potential energy and kinetic energy is not formally introduced in the TEKS until grade 6.
- Materials provide a pacing calendar that identifies the theme for each unit such as "Unit 1 - Scientific and Engineering Practices" and "Unit 2 - Matter and Energy" that includes the knowledge statement for each strand of the TEKS included in the unit. However, this document does not demonstrate how materials clearly and accurately provide instruction for educators unfamiliar with the language of the TEKS.

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

- Materials do not include a broad overview or guidance document detailing increased depth and complexity across the year. Instead, specific lessons may include a description in the "Scaffolding Information" section with a content progression. For example, a lesson on Science and Engineering Practices states, "this standard builds upon experiences and background that students may have had at home, and were taught in grades K-2." Materials continue to note goals for the current lesson and for future study. Materials include an objective in the hands-on

portion that state the lesson goals. The same lesson also includes an assessment opportunity. However, the content does not describe boundaries or content limitations. A lesson addressing the planets of the solar system is an example, with a stated objective and a prompt to “ask students to tell you the planets in order," as the ending task.

- Materials do not clearly define the boundaries of content that students must master for the grade level. For example, in grade 3 expository text “Sink or Float,” materials include a text explaining how mass and volume affect an object’s density. Grade 3 TEKS do not include the concept of *density.* In a grade 3 lesson on fossils as evidence of past living organisms and environments, teachers are provided with background information, preconceptions, and additional hints for instruction. These resources, while helpful for the teacher, do not provide a boundary for third-grade-appropriate instruction on this concept. Materials do specify the TEKS addressed in the *Science is a Verb* section with content aligned to the TEKS.

TPS STEAM into Science Grade 3

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 meet some of the criteria for this indicator. Materials provide 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 state, "Science Concepts, scientific practices, and engineering are introduced in this first component," in reference to the *Learn by Doing* Activity Reader. However, neither the Teacher Textbook nor the *Learn by Doing* Activity Reader indicates how or when scientific practices or overarching concepts are addressed in each section or within each topic. The inclusion of the Horizontal Alignment Chart, the TEKS 1-5 Content Guides, and the update of the pacing guide provide a document that shows when scientific and engineering practices and recurring themes are addressed. This provides minimal support to the teacher in understanding how this or how content builds horizontally or vertically.
- The Program Guide describes 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 STEAM Storybook 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 Program Guide does not fully support teachers, as it does not reference

specific learning. In the *Learn By Doing STEAM* Activity Reader Book, 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. In 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 Reading 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 little to help teachers understand how their specific grade-level content connects to prior or future learning.

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.

- The "Background and Misconceptions" section provides teachers with information to support the development of their content knowledge. For example, the Teacher Textbook provides context for teachers to understand the planets of the solar system and their orbit around the Sun. Materials provide background on climatology and weather components in the Teacher's Textbook. Materials also describe factors that impact the climate for the teacher, stating, "The climate of a location depends on latitude, proximity to land, water, mountains, and time of year." The Background and Misconceptions section provides extensive background information, much of it beyond the scope of the current grade level, and if for the teachers' information and background knowledge only as they develop their content knowledge.
- Materials identify common grade-level misconceptions students may struggle with differentiating between an environment and a habitat. These are often found in the "Common Misconceptions" section of a traditional lesson on ecosystems found in the Teacher Textbook. A suggestion to support students with this distinction is also provided. In another lesson on the formation of soil, a "Background and Misconceptions" section is included that provides background information for the teacher but does not identify any misconceptions third graders may have about this concept. Materials identify some grade-level misconceptions that are barriers to student conceptual development. For example, the STEAM Activity Guide Teacher Edition lesson "Make It Solid" includes information for teachers about the misconception students may have about the weight of a tin can, whether empty or full, matching the amount on the label.
- Materials include Teacher Tips to support teachers in developing their understanding of the content and how to further implement the current lesson. This is a STEAM program, so TPS provides, for example, a STEAM library. TPS provides the Alaska Library, Online Scientists library containing information about diverse scientists, engineers, and mathematicians. There are full components to assist teachers provide reader activity books and or special education projects.

TPS STEAM into Science Grade 3

The requirement does not ask for research articles or podcasts. It would be unwise for a publisher to provide podcasts as the content may not be available for the life of the adoption.

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

- Materials provide an explanation of the goals of the program. For example, in the Program Guide, 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).
- Materials provide a framework explaining the main intent or goals of the program. Materials provide information about the publisher that thoroughly describes the program's instructional approaches. For example, the publisher refers to their materials as a "Toolbox." The Toolbox is made up of "three key inquiry-based component areas." The first area includes traditional textbook lesson plans, collaborative and individual investigation, expository text, and activities aligned to TEKS and assessments. The second area includes "inquiry-based activities via lesson cycles covering a group of standards." The third area includes art projects that "are inclusive but particularly useful for far below grade level students, ELL, and special education users."
- Materials provide a framework explaining the main intent or goals of the program. For example, the *Learn By Doing STEAM* Activity Reader Guide Teacher Edition describes the intent of the STEAM reader as being "designed to introduce STEAM in an integrated fashion, instead of the traditionally separated method." A broad overview of the instructional approach is included to offer guidance in the areas of reading, comprehension skills, creating and editing drafts, activities, and pacing, vocabulary, the scientific method, safety in the classroom, systems, and the design engineering process. Materials provide a purpose for the structure and organization of the materials in the program. The Teacher Program Guide provides an explanation for why materials are designed the way they are. For example, materials in the Teacher Textbook follow a lesson structure with step-by-step "Introduction, Middle, and Summary" as well as "Science Is A Verb" labs which "allow teachers and students to see the science happen and to ensure preconceptions are not passed on."

TPS STEAM into Science Grade 3

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 provide support for 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 consistently provide learning activities that support students' meaningful sensemaking. Grade 3 students act as scientists by following the scientific method in a lesson on force and motion found in the *Learn By Doing STEAM* Activity Reader Book. Students read an expository text about mechanical energy and respond to comprehension questions about the text. Students also think and write a hypothesis about whether lifting a bucket of sand by hand or using a pulley would be easier.
- In the *Learn by Doing STEAM* Activity Book "Rocks and Fossils," students investigate rocks by reading a short story, demonstrating the force of gravity, and completing other activities acting as scientists and engineers. Students design and draw a hot air balloon and plot a course for the balloon over the town.

TPS STEAM into Science Grade 3

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

- The materials provide some opportunities to engage with grade-level appropriate scientific texts. However, in the Learn By Doing STEAM Activity Read for grade 3, students are presented with content that is not grade-level appropriate. Chapter 2 in this read is about Energy, and the text spends several pages discussing potential and kinetic energy and elaborates on those types of energy within the context of chemical energy. Later, in Chapter 3, Model Car Race, potential and kinetic energy appears again in the context of mechanical energy as the text reads, "Mechanical energy is the sum of the kinetic and potential energy and represents all of the energy an object has because of its position and movement." While scientifically accurate, this text is not grade-level appropriate, as potential energy, kinetic energy, or chemical energy are not introduced until grade 6, in TEKS 6.8A. This lack of developmental appropriateness inhibits students' ability to gather appropriate evidence and develop a grade-level appropriate understanding of the concepts.
- The materials sometimes include scientific text that is not grade-level appropriate. In the student textbook, the traditional lesson, Pushes and Pulls, the materials discuss work, include it as key vocabulary, and test students' knowledge of it in the Focus Questions. In TEKS 3.7B the focus is on changing the position of an object with pushes or pulls, not specifically work. This section of text also continues on about Newton's First and Second Laws of Motion, a topic that is introduced in grade 6. Both of these examples illustrate the lack of grade-level appropriateness with the scientific text provided to students.
- The materials provide some opportunities for students to engage with grade-level appropriate scientific texts. However, in the Force, Motion, and Energy section of the student text, students engage in an investigation of the different forms of energy. In this investigation, mechanical energy is consistently referred to as motion energy. This occurs despite the fact that the student expectation is at the top of the page using the TEKS-based vocabulary. Later in this section of text, students engage in a "Transfer of Energy" investigation to "demonstrate some of the ways in which electrical energy can be transferred to heat, light, and sound energy. This is incorrect terminology as the correct term is transformed, and the transformation of energy in a circuit is not introduced in the TEKS until grade 4 with 4.8C.
- The materials provide some opportunities for students to engage with grade-level appropriate scientific texts. However, In the Project-Based Lesson in the student text, the materials explore convection, radiation, and the Law of Conservation of Energy. All of these topics are not introduced until the Middle School TEKS. These are not grade-level appropriate and interfere with students' ability to understand the concept at the developmentally appropriate level.

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.

- Students engage in written and graphic modes of communication. For example, in *Amelia Rose Explores*, materials use the main character, Amelia Rose's thoughts and actions to teach content. Amelia Rose models higher-level thinking involving connection from concepts to previous knowledge. The activity asks students to confirm the information located in the narrative. Materials prompt students to test whether particular objects sink or float. After a unit on the physical properties of matter, materials prompt students to graph to represent data with

up to 4 categories. At the end of the vignette, students respond to a series of questions to check for understanding. Three of the five questions focus on recall skills. The other two questions prompt the student to apply information to describe the other changes in water, phase changes, and motion caused by waves.

- In a 3rd grade Think and Craft activity from the STEAM Activity Guide, students write a label about one of the processes in the formation of soil and then include labeled pictures of the components of soil and waste they believe is biodegradable.
- In Chapter 8 of the *Learn by Doing STEAM* Activity Reader, Activity 6, students draw a poster comparing different life cycles, one plant and one animal, assigned by the teacher. Students use given guiding questions for their research. Later, in Activity 7, students engage in the Scientific Method when investigating ferns in terrariums, which includes written portions during the Analysis and Discussion phase.

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.

- Grade 3 materials provide authentic student engagement of concepts through productive struggle while acting as scientists. In Activity 2, "Soil from the Garden," in Chapter 7 of the *Learn By Doing STEAM* Activity Reader Book, students use the scientific method to conduct three examinations of soil samples from a garden using a variety of science tools and safety equipment. Students learn that soil is made of components too small to see with the naked eye.
- In the lesson "How Can You Measure and Group Objects," students use science tools and a given set of objects to measure, test, and record physical properties, including mass, size, magnetism, appearance/texture, ability to sink or float, and temperature through a series of mini-experiments.
- In the STEAM Activity Guide, students design a system to test if a push or pool would make an object change its speed and/or direction.
- Materials create transfer opportunities for students to take what they have learned and use it flexibly in new situations. For example, in the STEAM Activity Guide, students complete a final design and engineering projects based on a need they see in the school. The lesson guides students through the complete Design Engineering Process to create their own product.
- In the Learn by Doing STEAM Activity Reader, after reading a short-story text about earthquakes, students use the design engineering process to construct a tower that has to be stable on a quaker-shaker table. Students use various materials to construct a building that is at least 40 cm tall and will stay strong on the Quaker-Shaker table for 20 seconds of moderate shaking.

TPS STEAM into Science Grade 3

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.	PM
2	Materials include embedded opportunities to develop and utilize scientific vocabulary in context.	PM
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 partially promote students' use of evidence to develop, communicate, and evaluate explanations and solutions.

Materials prompt students to use some evidence to support their hypotheses and claims. Materials include some 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 to 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 process in the Program Guide. The DAPIC, which stands for define, assess, plan, implement, and communicate, 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 provide teacher guidance for prompting students during experiments; however, the prompts lack emphasis on the use of evidence to support hypotheses and claims. For example, in the activity Ice Water Expansion the materials include the directions, "Write your hypothesis and then record in writing and drawings your materials, methods, and results. Finally, write your conclusion." The teacher edition extends limited supports that do not outright connect evidence to supporting a conclusion or the need to include data when making a claim. The teacher resources instead state, " Ask the students if their prediction was correct and what they learned from this experiment."
- Learn By Doing STEAM Activity Reader Teacher Edition, Chapter 8, Activity 7, students learn how to use evidence to support a hypothesis. Teacher guidance includes questions and prompts

to use with students during the analysis and discussion of results portion of the lesson, including:“Did the plants slow their growth with a lower level of water?” and “Look at the variability in the student’s collective data and analyze data by identifying significant features, patterns or sources of error. Ask the students how they would have designed the experiment differently. What were the advantages and limitations of the terrarium to model plant growth?” While the prompts and questions support students’ thinking, the discussion does not prompt students to use their own evidence to support a hypothesis. Additionally, it does not reference how students use evidence other than “to discuss.” The conclusion asks students to “record if their hypotheses were correct, and why, and here it should be noted that materials do not prompt students to refer to evidence when determining whether their hypotheses are correct.

- The materials provide some specific prompts for students to use evidence when supporting their hypotheses and claims. For example, the activity “Terrariums” from Chapter 8 of the Learn By Doing prompts teachers to have students “record if their hypotheses were correct, and why.” The materials specifically prompt students to use evidence when supporting their hypotheses and claims. For example, in the Science is a Verb lesson “Composting is Cool” in the Student Textbook, students explain if their results supported the hypotheses made at the start of the lab.
- In the Learn by Doing STEAM Activity Guide, students build terrariums and investigate the effect of too much or too little water. Materials ask students to discuss their observations (evidence) and answer the following question, "Did the plants slow their growth with a lower level of water? Write a statement about the cause and effect of low water and plant growth." Materials ask students to record if their hypothesis was correct and why.

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

- Materials present scientific vocabulary using two representations, embedded in the text with bold letters and in Key vocabulary charts. Corresponding visuals for the words aren't present for each word. In Chapter 2 of the Learn by Doing STEAM Activity guide, vocabulary is embedded within the text in bold letters with pictorials for most of the words. Materials present scientific vocabulary using keyword charts with the vocabulary word along with its definition. Additionally, the Program Guide suggests that teachers have students maintain their own word walls and create their own picture glossary cards. For example, in the lesson Properties in the student textbook, students are given a keyword chart with vocabulary words and their definitions but no pictures.
- The materials provide some opportunities for students to apply scientific vocabulary within context. For example, in the Teacher Textbook, the materials provide a lesson in Unit 2 on properties. The lesson includes a discussion on the scientific concepts, textbook work students complete on their own that includes a glossary of key terms at the end of the reading, and an investigation where students plan and test an experiment to measure physical properties including magnetism, the ability to sink or float, and mass. The investigation allows students to use scientific vocabulary as they plan, test, and record their investigation. The supports section offers some general support for struggling students and emergent bilingual students related to vocabulary, but there is no guidance or supports specific to the vocabulary of the lesson.
- The materials provide some opportunities for students to apply scientific vocabulary within context. For example, in the Learn By Doing STEAM Activity Reader Teacher Edition, Chapter 2, students participate in a read-aloud and discussion on different forms of energy, including thermal, sound, and light energy. Students are provided opportunities to apply these scientific vocabulary terms during activities following the whole group lesson. For example, in Activity 1,

students complete an investigation on sound energy by using cups and strings. Students are able to use scientific vocabulary as they complete the steps of the scientific method through this investigation. In Activity 7, students draw pictures identifying different forms of energy found in everyday life. Activity 9 includes a review of key scientific vocabulary terms. It also does not apply the terms within context during this activity.

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

- The materials provide some opportunities for students to employ the scientific method to develop a hypothesis and gather evidence. The Learn by Doing STEAM Activity Guide - Teacher Edition introduces aspects of the argumentation to the teachers for student support. For example, a section on weather asks students to gather weather data from different global locations. The materials also recommend teachers " work with (students) to create a short report summarizing their weather analysis in their notebook.
- Materials offer multiple opportunities for students to defend their arguments. However, they are not consistently being instructed on how to do those things. For example, in the Teacher Textbook, the project-based lesson on adaptations asks students to construct an argument with evidence that in a particular habitat, some organisms will survive well and others will not. The materials offer a table of how factors can impact stability and cause changes, but there is no guidance as to how to create the argument itself. Also, the materials provide opportunities for students to develop how to engage in the practice of argumentation and discourse. The Learn by Doing STEAM activity guide offers Design Engineering Challenges at the end of each chapter. Activity 2- Moving the ping-pong ball asks students to build and design a simple machine to move a ping-pong ball. Materials provide a Design Engineering Process with steps and explanations on how to complete the task. The steps are to ask what's the problem, imagine and design solutions, build the solution, test the solution, make it better, and communicate a successful solution.
- The materials integrate some discourse within stages of the learning cycle but do not integrate intentional argumentation into the learning cycle. In Chapter 5 of the Learn By Doing STEAM Activity Guide Teacher Edition, Activity 1, students use the scientific method "to observe the behavior of water in its different phases" using food dye, hot water, liquid water, and ice. Students "predict what they expect to see when they place the dropper of dye in the ice cold and heated water. Do they expect to see a difference, and if so, why?" during the hypothesis portion. After conducting the investigation, "students describe their results." The materials provide teachers with guiding questions to ask. Students "discuss what would cause the dye to disperse. Was there a difference in the results in class? Analyze the data with the students by jointly identifying significant features, patterns, or sources of error." Finally, students "record in writing whether their hypothesis was correct and what they learned from this experiment." While the activity provides opportunities for an argument to be integrated, it is not clearly identified or described. The lesson focuses on the discussion. The guidance mentions analyzing the data with students jointly but does not include prompts or questions for students to form, support, or discuss arguments based on evidence from the investigation

TPS STEAM into Science Grade 3

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.

- The materials provide some criteria for developmentally appropriate arguments to explain a phenomenon or defend a solution to problems using evidence acquired from learning experiences. One resource in the Teacher Program Guide describes the DAPIC process, providing teachers with a framework for students to define, assess, plan, implement, and communicate their investigations. The DAPIC offers a general overview and does not address specific content. Some activities direct opportunities for students to construct and present arguments. For example, the engineering activity “Moving a Ping Pong Ball” prompts teachers to have students “explain why they chose their simple machine or other design ideas, and demonstrate how it works.” There are questions provided after this prompt that guide a class discussion but do not have students defend their solutions discovered during the design process. The materials provide some evidence for developmentally appropriate arguments to explain a phenomenon or defend a solution using evidence acquired from learning experiences. For example, in a project-based lesson on ecosystems, the materials state that students will “construct an argument with evidence that in a particular habitat, some organisms can survive well, some survive less well, and some cannot survive at all.”Materials provide instruction for how to construct and present a verbal or written argument. Using the Design Engineering Process, students construct and present an argument. In the Design Engineering Challenge- Making a Ping-Pong Ball, students are given steps to ask, imagine, build, text, communicate, and revise their solutions. Students are given guided questions by the teacher to help with the discussion of their argument, then students identify important scientific evidence.
- The Learn by Doing STEAM Activity guide offers opportunities for students to engage in the Scientific Method, including developing a hypothesis, gathering data, and recording a conclusion. The materials provide prompts to help students make connections to the investigation, as seen in the chapter on sound waves. The teacher's guidance includes the guiding questions, "Were they able to hear more of their partner's speech with the cups or without the cups? Was their hypothesis correct? What did they learn from this activity." However, the materials do not explicitly indicate how to use evidence to support a claim or justify a conclusion as developmentally appropriate for the grade level. The skills do not apply to other scenarios beyond those addressed by the guiding questions. The materials extend a challenge in which students apply the Engineering Design Process. The teacher's guidance directs students to consider the parts of the system, the components that impacted the design, and how the design could be improved. The teacher notes also provide recommendations for the teacher, saying, "During all discussions, ask the students to listen actively to others, to identify important scientific evidence, and actively engage in scientific discussion."

TPS STEAM into Science Grade 3

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

Partial Meets | Score 2/4

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

Materials provide some teacher guidance on anticipating student responses and the use of questioning to deepen student thinking. Materials include some teacher guidance on how to scaffold and support students' development and use of scientific vocabulary in context. Materials provide some teacher guidance on preparing for student discourse and supporting students in using evidence to construct written and verbal claims. Materials partially 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 some 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 recommends that students responding correctly be provided with "Level 2 assessment questions" from the "Online Library - Assessment tools" for the TEKS being taught and affirm comprehension. The guide recommends that students responding incorrectly be provided with "Level 1 assessment questions." The materials state, "A student responds incorrectly - use the Online Library - Assessment tools; choose Level 1 assessment questions for the TEKS being taught…. Determine if there is a misconception and resolve."
- Materials 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 STEAM Activity reader book for relevant TEKS," and going back to "an earlier grade to ensure prior grade learning is completed."
- Materials provide teachers with possible student responses to questions and tasks. For example, the Weather unit materials have focus questions based on the text provided, with possible

student answers. Materials also include possible answers to an investigation, except where the question asks for a student's opinion, then "answers may vary".

- Materials in the Learn by Doing STEAM Activity guide do not provide teachers with possible student responses to questions and tasks. For example, in Chapter 1 Activity 3 students are asked a few questions to assess their text comprehension however, no possible student answers are present.

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

- The materials provide some guidance for the teacher on how to support students' use of scientific vocabulary in context. Materials provide broad guidance for encouraging vocabulary development. For example, after the keywords in the 3rd grade lesson "Name the Tool" teachers are encouraged to have students use scientific vocabulary "meaningfully during both speaking and writing activities." The materials mention using techniques such as concept mapping and drawing as ways to use vocabulary in context. Each chapter in the Learn By Doing STEAM Activity Reader Book includes an activity for students to work with vocabulary words and terms. For example, in Chapter 2, Activity 9, the guidance provided for teachers is to review vocabulary "using the TPS vocabulary cards." The purpose of this activity is "for students to understand [the words] meaning(s) and recognize them when spoken."
- Learn by Doing STEAM Activity guide materials do not provide embedded supports for the teacher in how to scaffold students' development of scientific vocabulary. The Essential Content guide provides teachers with information on how content is taught within the grade level. The Essential Content guide does not give support for how to scaffold student development of scientific vocabulary.
- The STEAM Activity Guide provides Word Wall Read Aloud lessons with vocabulary components to provide extra activities to ensure students master content. A Word Wall Read Aloud lesson in the Earth and Space Unit provides three multi-vocabulary lessons to reinforce scientific vocabulary that include students creating a classroom science vocabulary mural, fill-in-the-blank activities, writing a poem, creating flashcards with drawings, creating a crossword, and creating a 3D model of the Hubble Telescope with a presentation that includes at least two keywords. Some of the activities do not directly support the development and use of scientific vocabulary in context, relying on rote memorization of terms. The materials do not offer guidance on what activities would be best for students of varying abilities.

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

- The materials provide some teacher support to prepare for student discourse. In the 3rd grade Learn By Doing STEAM Activity Reader Book, teachers are prompted to "stress the importance of actively listening to other students during sharing and participating in discussions respectfully." Materials do not include the support for establishing this classroom culture. Lessons in the 3rd-grade Teacher Textbook include opportunities for student discourse. Materials do not provide teacher support in preparing students to engage in discourse beyond the early lessons in the school year. For example, in the investigation "Name That Tool," the focus is on a list of things to look for during the discussion. This investigation focuses more on vocabulary acquisition rather than establishing a classroom culture for student discourse.

- Materials provide teacher questions for supporting student discourse and the use of evidence in constructing written and verbal claims. For example, grade 3 materials provide teachers with questions designed to help students complete the engineering design process to solve a real-life problem. The question stems include, "What is the problem?" and "What are some possible solutions?" Students are encouraged to discuss with peers and write the answers on a table. Some lessons include general teacher guidance. For example, the grade 3 lesson on Magnetism provides teachers with questions designed to help students describe their observations. Some of the sentence stems include, "What happened to the paperclip?" and" predict what's going to happen next?" Students are then encouraged to write their observations and answers to discussions. Materials ask teachers to "Prompt" students into thinking but don't provide sample prompts teachers can use to support students in using evidence.
- The materials provide some guidance that teachers can use to provide feedback to students while engaging in discourse. For example, the STEAM Activity Guide includes a Vignette in the unit of Matter and Energy, culminating with a discussion at the end of the nine-day cycle. The discussion provides some guidance teachers can use to provide feedback. For example, “Have each group present their answers to the rest of the class. Compare responses and ensure accuracy within each group. Resolve any misconceptions.”
- The materials provide some guidance that teachers can use to provide feedback to students while using evidence to construct claims. For example, the Assessment Guide provides a performance task within the Matter and Energy unit. The performance task asks students to plan an investigation “to find which material has the most effective properties from which to make a bath toy for a baby.” Students conduct the test and then write a report. The Teacher Edition provides a 4-point rubric to assess the task. The rubric provides details students could include such as, “4 Points: Students identify relevant properties such as safe, able to float, lightweight, bright and colorful, and waterproof. They are able to report on the suitability or otherwise of each for this purpose and dismiss wood sponge, card, and metal.” The rubric does not provide how teachers can provide feedback to help students achieve 4 points without giving direct answers. The guidance does not provide any probing or scaffolding questions for teachers to use.

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

- The materials provide some teacher guidance to engage students’ thinking in various modes of communication. For example, in the 3rd-grade investigation “Safe and Responsible Working Presentation” found in the Assessment Guide, teachers are guided to select a mode of communication for students based on their knowledge and experience in using software such as PowerPoint. The materials suggest that “if [students] have not had a chance to use this software before, this could be an opportunity to introduce it. Alternatively, they could make their presentation as a verbal performance.” The materials do not provide teacher support and guidance to engage students’ thinking in various modes of communication. For example, the “Design Engineering Challenge - Moving a Ping-Pong Ball” in the Learn By Doing STEAM Activity Reader Book provides questions for teachers to ask during discussions. Materials do not include exemplars of students’ verbal responses for teachers to facilitate students showing their thinking in a verbal form.
- The materials provide some teacher support for facilitating the sharing of students’ finding solutions. Materials do not consistently provide feedback tips and examples teachers can use to support students throughout the learning cycle. For example, the STEAM Activity Guide includes

an activity in a Word Wall Read Aloud Activity in Unit 2. Students work in small groups to “plan to test the materials and to create a graph of your choice to show the properties of the materials using the same categories as in the story.” The materials ask students to “create two questions and answers to ask another group about your chart.” Groups “swap questions and answer them.” The Teacher Edition does not provide any further teacher guidance. The student version of the activity is identical to the teacher version. While the activity allows students to work with others and share their ideas about planning a test, the materials provide no teacher support to facilitate the sharing of student findings.

- Materials provide some teacher support and guidance to engage students' thinking in various modes of communication throughout the year/course. For example, the Teacher Program Guide describes the DAPIC process as a tool to define, assess, plan, implement, and communicate. Materials addressing content provide an investigation table for students to write down their ideas for completing the engineering process. Materials provide an investigation table for students to write down their ideas for completing the engineering process. Materials provide teacher support and guidance to engage students' thinking in various modes of communication throughout the year/course. Materials provide open-ended questions to support students in completing a scientific and engineering project. For example, The materials provide specific questions to assist students in sharing their information, such as "Did everything go according to plan?" and "Did they discover anything surprising?" The materials also recommend teachers remind students to use their new vocabulary, taking time to address any terms that students do not understand. The materials further encourage teachers to tell students to identify key content and evidence throughout the discussion.

TPS STEAM into Science Grade 3

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

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

Evidence includes but is not limited to:

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

- The Learn by Doing STEAM Activity Reader contains checks for understanding throughout the resource. Some idea boxes within the reading provide questions for the teachers to pose to the students. For example, Idea Box 1 in the chapter Mystery Artist states, "Ask the students to write about how they use water every day. Ask them to describe whether it is liquid, solid, or gas and why it fills the criteria for its state of matter. The materials do not pair the idea box content with prompts for teachers to listen to discussion, checklists, or rubrics to identify responses indicating mastery. The materials extend informal assessments throughout the Learn by Doing STEAM Activity Reader. The chapter, National Park Field Trip, Rocks, and Soil! Includes an idea box prompting teachers to "Ask students to come up with a flow chart that shows an example of weathering and erosion."
- The materials provide multiple assessments in the Assessment Guide. For example, the Force, Matter, and Energy unit, in Grade 3, contains three “Science Assessment Questions” The assessments contain a variety of formats that include multiple choice questions, open-ended questions, and performance tasks. For example, a performance task in the Force, Matter, and Energy units asks third-grade students to design a gate latch that can be opened and closed with a magnet. In the “Amelia Rose Explores Matter and Energy” lesson in the STEAM Activity Guide,

teachers ask 3rd-grade students “if they know how to weigh things correctly.” Teachers are directed to “have students show” their ability using the “combined rocker scales.” Teachers are then directed to discuss the physical properties of matter that could be tested using the materials in the story.

- Materials provide diagnostic assessments. The Teacher Program Guide contains a section called Support Notes for Teachers. Within the Support Notes for Teachers segment in the TPG, there 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." Materials discuss the Benchmark tests included in the program. Benchmark 1 test assesses natural knowledge at the term's commencement before any program content. Benchmark 2 test is TEKS-based and set by teachers for TEKS taught on the examination date. Benchmark 3 test is the end-of-term test covering TEKS taught by a date given. Benchmark 4 is the end-of-year test to review skills by students by TEKS for all TEKS. Although the Program Guide states that there are four benchmark assessments, grade 3 materials provide three benchmark assessments in the Blackline Masters.

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

- Materials indicate which student expectations are assessed. For example, materials provide both the TEKS correlations for each assessment item and the answer keys for every assessment. In the Assessment Guide, TEKS 12C has open-ended and multiple-choice assessment questions with the answers. Materials indicate which student expectations are assessed. For example, materials include an assessment table in each unit overview that lists all assessments for the unit but doesn't specify which student expectations are assessed in each assessment. The Scope and Sequence provides an overview of all TEKS in each unit, as well as textbook references for those TEKS. The references tell teachers where to find materials for those TEKS throughout the program, like assessment, but do not specify which TEKS listed are included in the assessment.
- The assessment database lists TEKS above each item. Assessment items indicate only one standard per assessment question/task. Several assessment items assess more than one TEKS. The materials assess all student expectations, as outlined in the TEKS. The materials include an assessment generator that includes at least one question per expectation. Each lesson in the Teacher Textbook identifies the TEKS that are assessed in formative and informal assessments. For example, the “What Have You Learned?” section of a 3rd-grade lesson on properties includes “6(A) measure, test, and record physical properties of matter, including temperature, mass, magnetism, and the ability to sink or float in water” is provided at the top of the page.
- The materials include a content guide that provides information on how TEKS 1- 5 are integrated into lessons. Not all materials clearly identify the 2-5 TEKS included in assessments or clearly define levels of student mastery of 2-5 standards. For example, the TEKS 1-5 Content Guide identifies Activity 6 of Chapter 4 in the Learn By Doing Steam Activity Reader to include 3.2C, “Students will use mathematical calculations to compare patterns and relationships.” The student and teacher editions do not identify 3.2C as an assessed standard of the activity. Students use the scientific method to investigate the transfer of heat energy. Students plot the temperature change of the investigation on graph paper and write a conclusion on their results. Teacher materials include guidance on discussion but do not provide specific guidance on assessing the 3.2C standard in this activity.

TPS STEAM into Science Grade 3

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

- Materials include assessments requiring students to integrate scientific knowledge and science and engineering practices with recurrent themes appropriate to the student's assessment expectation. For example, in the Learn by Doing STEAM Activity Guide, the assessments integrate scientific knowledge through informational fiction, science, and engineering practices. Activity 7 is represented through students building a model of the Earth's and Moon's orbit. Lastly, focusing on the transfer of heat energy. Materials include some assessments requiring students to integrate scientific knowledge and science and engineering practices with recurrent themes appropriate to the student's assessment expectation. For example, in the Learn by Doing STEAM Activity Guide, Chapter 6, the assessment integrates scientific knowledge through informational fictional short stories, Activity 2 integrates science and engineering practices by having students design and build a tower, and recurring themes are present in Activity 7 with landforms.
- The assessment generator provides a tool to select standards, science and engineering practices, recurring themes and concepts, and core content. The materials display items based on the standards selected. The Assessment Guide poses some questions in several formats. In the section based on focus, motion, and energy, the materials pose the free response question, "What kind of effects can magnets have on each other?" and a multi-select item, "Which of the following can pull an object closer or push it away without touching it?" However, the resources do not integrate or indicate the alignment of recurring themes and concepts or science and engineering practices.
- The materials include some assessments that require students to integrate scientific knowledge and science and engineering practices, with recurring themes appropriate to the student expectations being assessed in some ways. For example, in the Teacher Textbook, after completing a reading assignment on ecosystems, students “draw a diagram of a chosen habitat. The Teacher materials include some guidance that incorporates 3.5B, identifying and investigating cause-and-effect relationships to analyze problems. The TEKS 1-5 Content Guide identifies this performance task as supporting 3.5D, integrating the recurring theme of cause-and-effect relationships with scientific and engineering practices. However, the Teacher Textbook does not directly label 3.5B in the standard as an assessed standard.

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

- Materials include assessments in the grade 3 materials that require students to apply knowledge and skills to novel contexts, such as a new phenomenon or problem. For example, the 3rd grade Assessment Guide prompts students to analyze and sequence data on the distance of the planets in Earth’s solar system and create a bar graph using graph paper. In another task, students apply their knowledge of the order of the planets to create a travel brochure “about the planets, moons, and other objects we would see on a trip from Neptune to Earth.”
- Materials in the Teacher Textbook include different assessments for each concept. For example, the lesson on weather includes an assessment that prompts students to make statements about the weather data they collect. Another prompts students to draw graphs using the weather data collected. These assessments help students compare and describe weather conditions in different locations as stated in the TEKS.
- The Learn by Doing STEAM Activity Reader provides some research activities during which students apply their knowledge to different scenarios. For example, Activity 6, Life Cycles,

states," The objective of the research is to compare and contrast two different life cycles. Assign each student two life cycles, one plant and one animal." The research opportunity extends the content to new situations not addressed within the chapter.

- Additionally, in the Student Textbook, students investigate patterns of motion. The Assessment Guide provides an assessment task aligned with the standard. Students create patterns on paper showing the motion of a ball as it travels by using a cardboard lid, paint, and different balls. The rubric indicates that students should be able to predict the patterns of motion of the ball to produce specific shapes on paper. Materials include a variety of performance tasks and other ways of assessing learning that require students to apply knowledge and skills to novel contexts, including but not limited to the following examples:
    - Students write a poem about the states of matter.
    - Students act as detectives to find a mystery planet.
    - Students use their knowledge of earthquakes as they act like an author and write a story.
    - Students use their knowledge to design an advertisement.

TPS STEAM into Science Grade 3

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.	PM
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.	PM
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 some 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. Some materials 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.

- The teachers' editions inconsistently provide assistance for evaluating responses. The Learn by Doing STEAM Reader Book only contains examples for student responses to general questions that are to be investigated during a culminating activity for the content TEKS, located under the Assessment section of the guide's table of contents, but many activities in this guide include no guidance for evaluating student responses. Each chapter in this Reader has multiple activities, sometimes as many as 8 per chapter, and there is no guidance for evaluating students' responses or performance in those activities. This is in sharp contrast to the Teacher Textbook, which offers guidance in red text for every student activity/question.
- Materials include information that guides teachers in evaluating student responses. For example, materials provide guidance on what should be included in student responses when they explain how soils are formed. Materials also include an answer key for the "Test Yourself" activity in the Teacher Textbook. The STEAM Activity Guide includes possible student answers to a question about Earth's environment and resources.
- The materials provide sample student responses and some rubrics. Materials include some resources that guide teachers in evaluating student responses. For example, teachers provide a Learn By Doing Assessment Rubric that includes guidance on evaluating student responses. In Grade 3, students describe the impact a flood or a drought can have on the living things in a

forest ecosystem. The rubric provides guidance on evaluating student responses, indicating a student with some proficiency "may be able to describe a drought or flood but struggle to describe the impact on a forest."

- The Assessment Guide Teacher Edition provides rubrics for performance tasks. For example, in Grade 3, students demonstrate what they have learned about magnets. The task identifies six requirements students must demonstrate, including attraction, repulsion, and the effect of objects between a magnet and the object it attracts. The materials include a rubric that provides some guidance in evaluating student responses. Guidance for 4 points includes, "Students exceed all the required elements of the prompt." The rubric criteria are as follows.3 - Students meet all the required elements of the prompt. 2 - Students meet most of the required elements of the prompt. 1 - Students meet some of the required elements of the prompt. 0 - Students meet few of the required elements of the prompt This rubric doesn't guide the teacher as to what the "elements of the prompt" are. The rubrics in this guide are often vague and not useful in guiding teachers to evaluate student responses.

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.

- The Graded Assessment Database offers three levels: Below, At, and Above, to support teacher analysis of data. However, the materials do not guide teachers to analyze data or use the results to respond to students' needs. The database does not contain a tool for teachers to view data in a comprehensive format data table graphic form. The materials extend sample responses and rubrics to assist teachers in evaluating student responses. Though present, the 4-point rubrics do not clearly articulate content-specific criteria. For example, the rubric recommends students receive 4 points for completely responding to the prompt correctly and 3 points for primarily responding correctly.
- Materials provide resources to support teachers' analysis of assessment data. Materials include an Assessment Matrix that lists the knowledge statements for core concepts to support tracking overall data for students. Materials do not provide guidance documents to support teachers' analysis of assessment data. The Assessment Database information found in the Introduction section of the Teacher Textbook states that "effective and efficient instruction relies on accurate assessment" but does not provide reference to any guidance documents or resources to support teachers in analyzing data to drive instruction.
- Materials provide some guidance to support the teacher's interpretation of the data. For example, student proficiency levels are labeled in multiple ways in different components of the program. The Program Guide refers to students as level 1, level 2, or level 3 learners in the Support Notes for Teachers section. Proficiency is described as Some proficiency, Approaching mastery, and Mastered on the Learn By Doing Assessment Rubric and in the STEAM Storybook Assessment Rubric information located in the Program Guide. The Report Card lists the following proficiencies: Novice (not yet evident), Intermediate (developing), and Expert (mastered). Materials provide varying assessment opportunities but do not consistently provide evaluation tools to collect data that can be used to respond to student-specific needs. For example, the Learn By Doing STEAM Activity Reader utilized the Scientific Method as an assessment tool. The materials provide guidance on implementing the Scientific Method in the Introduction but do not provide a rubric for teachers to evaluate student proficiency levels.

TPS STEAM into Science Grade 3

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

- The materials offer a matrix to assist with charting student progress and assessment performance. The materials require teachers to enter data into the matrix by student manually. With class sizes of 20 or more students, teachers will require significant time to chart data using the matrix. The assessment tool does not guide or offer recommendations to assist teachers with planning instruction. The materials do not include support for instructional grouping based on assessment data or suggest content for review.
- The TPS Interactive Assessment Software Tool allows teachers to create and modify questions within the data bank to support differentiated instruction. Teachers have the ability to simplify language, as appropriate, and include exemplars for open-ended questions to help identify students in need of additional support. The STEAM Activity Guide includes teacher guidance to other product materials to support differentiated instruction based on student data. For example, materials refer teachers to the “TPS Reader Activity Books” and the “TPS STEAM Science/ELA/Math/PSHE Library” to support struggling or advanced students.
- The information gathered from the assessment tools helps teachers when planning differentiated instruction in some ways. For example, the Learn By Doing Assessment Matrix categorizes students into three proficiencies: Some Proficiency, Approaching Mastery, and Mastered. Teachers can use this information to assign below-grade level students Level 1 questions from the Assessment Generator, locating appropriate questions by TEKS, as stated by the Program Guide for below-grade-level students. The information gathered from the assessment tools helps teachers when planning differentiated instruction in some ways. According to the Program Guide, teachers are provided with an Assessment Matrix to collect and enter student data. The Program Guide details that Benchmark tests, Focus Questions, and Performance Tasks should be entered into the Assessment Matrix and transferred to the report card. The Progress Monitoring section of the Program Guide does not provide guidance on how to use the tool to differentiate instruction. Teachers can refer to the guidance found in the Teacher Support section to assign Leveled Questions from the Assessment Generator based on TEKS.

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

- The Assessment Guide offers review activities, performance tasks, and reteach assessments to assist teachers with direct instruction for using interventions. However, there is no guidance for which activities are used for which students at what time. For example, the material states," [students] are to demonstrate, using their bodies and gym equipment as required, the effects of balanced and unbalanced forces on an object as required, the effects of balanced and unbalanced focuses on an object (which could be their own body." There is no information as to when to use this and with which students.
- In the Learn By Doing Assessment Rubric to collect student data, categorize performance levels as Some Proficiency, Approaching Mastery, and Mastered. The Program Guide provides limited guidance on students who are considered Level 1. “Level 1 learners will require more time and content from STEM and arts projects in conjunction with story books.” Additionally, Support Matrices provide teachers with guidance on materials to use when supporting students but do not provide guidance as to how to support them. The materials do not provide guidance on

which specific lessons or activities from the STEAM Activity Guide should be used for level 1 students who score Some proficiency on the Learn By Doing Assessment Rubric with TEKS 3.6A, measure, test, and record physical properties of matter.

- The materials provide some teacher guidance for responding to performance data. For example, the Teacher Program Guide directs teachers to “grade and insert results” for “Focus Questions” and “Performance Tasks” onto the report card. Materials include support to offer students with various needs in the activities found in the Teacher Textbook but do not guide teachers in how to respond to data. For example, the lesson “Solar System” directs teachers that “some students will need to be directed to a specific site or page which contains all the information they need” rather than responding to the data collected from the activity.

TPS STEAM into Science Grade 3

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.	PM
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.	PM
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

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

Materials partially include items that are scientifically accurate, avoid bias, and are free from errors. Assessment tools use some clear pictures and graphics that are developmentally appropriate. Materials provide some 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 to learning goals.

Evidence includes but is not limited to:

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

- The Online Assessment Generator for 3rd grade contains items that align with grade-level concepts and science and engineering practices in a scientifically accurate way. For example, the “above” level assessment items for forces include items that include accurate examples of how forces, including gravity, magnetism, and pushes and pulls are used.
- The Assessment Database contains colloquial language not commonly used in the United States. For example, item 1795 asks, "What might make it harder to pull a trolley?" The word *trolley* may not be recognized by Texas students as a shopping cart.
- The Assessment Database contains a few errors or omissions. For example, items 5298 and 5299 do not have the correct answer indicated. Item number 1813 contains conflicting spellings for the same term. The word yo-yo appears in three different ways: yoyo, yo-yoy, and yoyo in the question.

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

- The online Assessment Database includes some images and charts that are not clear. For example, in item 1525, students look at an image and select a response. The chart lists several cities with varying shades of blue. The question does not have labels on the axes or lines to connect one city to another. Additionally, the cells do not align as in a 2x2 table.

- The Assessment Database contains few visuals. Four of the 100 reviewed questions in the generated exam contained clip art and a chart. Item 5297 used clip art as answer choices for the question, "Which picture shows a liquid?" The images are grainy and dated. Additionally, the third answer choice, a balloon, exceeds the dimensions of the item format and hangs out of the box surrounding each question. The same characteristics were present for items 5298, 5299, and 5300. The Student Textbook contains a table with clip art of various flowers students use to create a picture graph for a “Math Extension” assessment. The table includes a highly detailed photograph of a mum that may be difficult for students to draw. The table is missing graphics for the rose or zinnia.
- Some assessment items include developmentally appropriate pictures. For example, the Assessment Guide includes photographs of the different phases of the Moon in an assessment of the Sun, Earth, and Moon system. In an assessment of life cycles, the Assessment Guide includes diagrams of the life cycles of a butterfly and a frog. Both pictures clearly show each stage of the life cycle and use developmentally appropriate images. In Learn by Doing Chapter 8, materials contain pictures of a food chain. The food chain is simple, contains arrows to show the energy flow, and is labeled. The Learn by Doing Chapter 6 contains clear, colored, labeled pictures of landforms.

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

- Materials provide some guidance to ensure consistent and accurate administration of assessment tools. The “How to Use the Assessment Generator Tool” video walks teachers through creating an assessment with this online tool. It also provides some ways that teachers could use a created assessment with students that include printing or displaying for the group or class to complete. Materials do not include information about how to administer assessments. Materials include reminders or tips that give suggestions for the time allotted to complete some of the assessments. Not all assessments include time allotment suggestions.
- Materials include some information that supports the teacher’s understanding of assessment tools and their scoring procedures. For example, the Assessment Guide provides performance tasks that include limited and inconsistent guidance on scoring rubrics. In Grade 3, students “make a table to show the results of a test that you ran to compare different materials” and then provide an explanation of which material works best for the intended purpose based on the results. An example is provided, “materials for a bridge.” The task provides four TEKS, printed above the task. The rubric provides limited information on the assessment’s scoring procedures. Zero to four points are possible. However, the criteria for each score do not fully support the task. For example, to score four points, students “exceed all the required elements of the prompt.”
- The Program Guide provides limited information on administering and scoring questions from the Assessment Generator. After completing activities in each chapter of the Learn By Doing Activity Reader, “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”. Materials do not state how teachers are to use the assessment matrix tool.
- The Teacher Textbook provides a summary of the Assessment Database. The guidance states, “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 do not provide any checklists of criteria for scoring or recording visual assessments.

TPS STEAM into Science Grade 3

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

- Materials include an assessment generator teachers use to create assessments with certain TEKS in one of three test format options–using questions identified as below, on, or above grade level for each student's expectation. Teachers can assign assessments they create to individual students. While materials offer differentiated assessment options, materials do not include student assessment tools such as speech-to-text for answering written response items, visual clues such as color-coding text within test items, or text-to-speech features that enable students to hear text read aloud.
- The Assessment Guide provides a scoring rubric for performance tasks but does not suggest any ways for students of varying abilities to demonstrate mastery of learning goals. For example, a performance task on weather includes a rubric that indicates students scoring 4 points collect and record data “accurately and logically,” create a graph with “labeled axes, a title, and two sets of data plotted side by side,” and an explanatory paragraph that is “well written and considered.” Materials do not include guidance for how students can perform a simplified task that holds true to the objective coverage.
- For example, an investigation in the Teacher's Textbook asks students to describe and classify samples of matter as solids, liquids, and gasses. The teacher materials state, “Students may also need help with reading the text. Encourage students to make concept maps or drawings to help them to recall their prior knowledge.” The materials do not provide a text-to-speech option, requiring the teacher or another student to read the text aloud.

TPS STEAM into Science Grade 3

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.	PM
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.	PM

Partial Meets | Score 1/2

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

Materials provide some recommended targeted instruction and activities to scaffold learning for students who have not yet achieved grade-level mastery. Materials provide enrichment activities for all levels of learners. Materials provide some 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 do not ensure teachers can consistently target instruction to develop precursor skills necessary to access grade-level content. In the Learn By Doing Steam Activity Reader Teacher Edition, the section on Activities and Pacing gives guidance on activities following each chapter, stating, “If the activities require skill sets that are not at the level mastered by the students, return to them later when each student is ready.” Chapter 1 does not include any guidance on what precursor skills are necessary for students to be successful with grade-level content before engaging with the chapter materials. The Teacher Edition lacks a chapter introduction where needed skills and chapter objectives on content knowledge, scientific and engineering practices, and/or recurring concepts and theme information could be located. After the two short stories in Chapter 1, the materials provide limited and inconsistent guidance on what skills should be mastered for each of the eight activities. For example, Activity 1 objectives state, “The objective of this activity is for students to describe the physical properties of everyday items.” The activity includes a preparation section and states, “Use the scientific method outlined in the Introduction as a guide for this activity.”
- The materials provide a general recommendation in the support section, reminding teachers to provide many hands-on investigation opportunities. The ELL portion was specific, addressing content-specific examples of vocabulary examples. In the Teacher Textbook, force motion and energy offer additional hints for teachers to support students encountering misconceptions regarding gravity. However, the materials provided only a reminder without specific guidance.
- Materials provide embedded definitions and visuals in a text to clarify vocabulary and target instruction for student mastery. For example, in the Learn by Doing STEAM Activity Guide, the

definition of energy is in big bold writing following an additional explanation and visuals to further understanding. Materials in the Teacher program guide state,"TPS has created a variety of art projects to help students master science content." However, those art projects don't appear to be aligned with the scientific concepts associated with the lesson from the Teacher's Textbook.

Materials provide enrichment activities for all levels of learners.

- The materials provide enrichment activities that account for learner variability. In a grade 3 lesson about patterns in Earth's solar system, teacher guidance is provided for advanced students to extend their understanding by using a compass to determine the direction they would look to see the Sun rise in the morning. For example, in a lesson about how humans use natural resources, an activity is provided for advanced learners to learn how burning fossil fuels affects ocean acidity.
- Each chapter includes a variety of activities that appeal to students' interests and abilities. Air balloons, bowling balls, race cars, and frogs lesson consist of 8 activities: activity 1, construct pulleys; activity 2, design a simple machine; activity 3 math challenges; activity 4 text comprehension and discussion; activities 5-7 engineering and research; 8 vocabulary. Each chapter in the Learn by Doing STEAM Activity Guide provides readings to encourage all students to make connections, learn about the chapter concept and standards, and integrate mathematical practices where applicable. For example, in Air balloons, bowling balls, race cars, and frogs, the text provides text on the different types of energy and using them to make machines; within the text are Idea boxes that encourage students to make connections by pointing out simple machines in the real world, and mind-mapping.
- The Learn By Doing STEAM Activity Reader provides an initial reading and discussion lesson, followed by a short narrative text and a set of activities for students to complete afterward. The introduction of the material describes the pacing of activities; "The chapter text, idea boxes, and activities have been set up proportionally so that reading the story text represents 40%, and the activities and idea box 60% of the instructional time set aside for STEAM." The guidance also states, "If the activities require skill sets that are not at the level yet mastered by the students, return to them later when each student is ready." Chapter 4 includes nine activities, ranging from one-paragraph descriptions to over a page. Each activity provides an activity objective, which can be linked to the chapter text and discussion. The chapter provides a varied set of activities to enrich the content objectives of the chapter. For example, Activity 1 provides students an opportunity to research and write about a planet. Activity 2 provides students an opportunity to "demonstrate an understanding of the relationship between planetary distance from the Sun and orbit times," by students acting out the orbit of planets. Activity 3 provides students an opportunity to interpret seasonal weather data using models, reading graphs, and hands-on investigations. Activity 4 allows students to "draw what a car might look like and how it might perform in one hundred years."

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

- The lessons include some recommendations for just-in-time scaffolds leading to perseverance of learning at the moment. Grade 3 in the Learn By Doing STEAM Activity Reader Book includes idea boxes within the text that provide prompts and cues to support student engagement. For example, in Chapter 1 "Sink or Float", idea box 1 suggests creating a "mind map of examples of solids, liquids, and gases students are exposed to in their everyday lives" and asking what makes

each example a solid, liquid, or gas. The lessons in the Teacher Textbook include recommendations for just-in-time scaffolds to develop productive perseverance in learning. For example, a 3rd-grade investigation of the planets in Earth's solar system provides suggestions for modifying the number of specific facts students research and extending the lesson to create a wall display that includes all the planets. While there are multiple activities to support students, there is little guidance in how to effectively use these activities or consistently how to modify to provide just-in-time learning acceleration.

- The materials, while providing a plethora of activities, do little to guide teachers in what just-in-time learning acceleration is or how to use the activities or modify them to better meet the needs of students where they are.
- The materials offer a large 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. Materials provide some recommendations for just-in-time scaffolds to develop productive perseverance of learning at the moment within the lessons. For example, the Learn By Doing Steam Activity Reader Teacher Edition provides teachers with idea boxes to help deliver instructions. In Chapter 1, Idea Box 2 provides a demonstration of a difficult concept, "that gas will continue to expand until it fills a container." It guides the teacher to demonstrate this concept by lighting a scented candle and explaining the scent of gas expansion filling the room (container). Idea Box 3 guides teachers to play a game where students guess an object based on a verbal description of its physical properties. However, the recommendations are not as present in the materials enough to offer true guidance to the teacher on how to utilize the materials in a way that would provide critical, just-in-time learning acceleration for all students.

TPS STEAM into Science Grade 3

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 include some 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 some 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 engage students in mastery of the content through a variety of instructional approaches. For example, materials include opportunities for students to engage in inquiry-based learning activities, such as building a terrarium to “investigate the effect of too much or too little water.” Materials include opportunities for students to master content through the use of digital text found in the TPS Reader Activity Books. In a 3rd grade lesson on the flow of energy in a food chain, students access the list of books “Food Chains in Life Processes” to explain what starts all food chains.
- For example, lessons include authentic tasks in which students use tools to measure and collect data. In the Teacher's Textbook lesson on Newton's 1st and 2nd Laws of Motion, students use different types of equipment to test Newton's Laws. Following the investigations, students critique, evaluate, and analyze what has been observed and discovered. Materials engage students in the mastery of the content through a variety of developmentally appropriate instructional approaches. For example, lessons include opportunities for students to engage in collaborative or cooperative learning activities. In the Teacher's Textbook investigations on

Invisible Forces, students work in groups to investigate gravity and magnetism and discuss their findings.

- Lessons include hands-on investigation, modeling and drawing, reading, and written work. For example, in Unit 4 of the Teacher Textbook, students engage in a variety of activities that support the content objective: Students will explore and record how soils are formed by the weathering of rock and the decomposition of plant and animal remains. The textbook offers two "Science is a Verb" investigations. In the first investigation, students observe soil samples with a hand lens. In the second investigation, students investigate how rocks can be broken down by physical weathering using a sugar cookie and various methods to replicate physical weathering found in nature. Following the two investigations is a Traditional Lesson plan that includes an introduction lecture showing different soil sample compositions, textbook work with science concept questions and discussions, and an investigation where students compare soil samples and describe the matter they are composed of. The lesson uses hands-on investigation, reading, and written work.

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

- The materials support a variety of instructional groupings (e.g., whole group, small group, partners). Lessons on core content in the Teacher Textbook are provided to the whole group. Suggestions are provided for small groups or partners for many of the investigations. For example, the 3rd-grade lesson "Earth's Changing Surface" implies whole group instruction during the Introduction and Textbook Work portions of the lesson, while the Investigation: Build a Volcano suggests students "work individually, in pairs or small groups for this task." The materials support a variety of instructional groupings. A lesson on life cycles in the STEAM Activity Guide suggests students work as a whole class, individually, and in pairs or small groups assigned by the teacher. Students work as a whole class during the "Story/Small lesson exercise," then work in groups or pairs to complete the "Life Cycle of a Frog activity," and finally research the life cycle of another animal individually.
- In the Program Guide, the materials state, "It is clear that TPS has ensured flexible grouping as, for example, in STEM and art projects, individual, paired, small group, and whole-group activities appear." It also states, "details of how to approach the delivery of content is shown in detail within lesson plans and/or this guide." Other areas of the Support Notes for Teachers reference using a variety of materials to support student needs and using assessment tools to level students 1, 2, or 3. For example, in the Teacher Textbook lesson on magnetism and gravity, the investigation guidance states in step 2: "Divide students into small groups." The lesson plan then moves on to the investigation stations.

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

- The materials inconsistently support multiple types of structures, and they lack clear teacher guidance. The Program Guide's Support Notes for Teachers provide some detail on how the program starts with the STEAM Activity Reader, which teaches literacy with science. The materials state teachers should use the textbook, which includes expository text, investigations, assessment materials, and literacy and math-connected challenges. Furthermore, the STEAM Activity Guide offers aligned STEM and Arts activities and an engineering practice project. The Support Notes for Teachers in the Program Guide give an overview of each program piece, its contents, and the sequence of materials. The program begins with the Learn by Doing STEAM

Activity Reader Book. The materials offer multiple types of practices but must provide guidance and structures for achieving effective implementation.

- The materials provide some general guidance for the Design Engineering Process to support students' communication. For example, the resources state, "During the sharing phase, encourage the children to actively listen to other children and participate respectfully during discussions." However, the materials do not offer detailed structures for implementation that would allow teachers unfamiliar with how to facilitate engineering design challenges to do it effectively.
- The materials provide some teacher guidance and structures for the implementation of multiple types of practice. For example, in a lesson on types of energy in the Teacher Textbook, guidance is provided for vocabulary development through repeated practice of" basic and academic vocabulary" while working in pairs and during whole group activities. The investigations in this lesson support multiple types of practice, referring students to work in pairs in the "Windmills" investigation and in groups in the "Too Hot to Handle?" investigation. However, there was no guidance provided for the teacher to support these structures to achieve effective implementation, such as strategies to support groups struggling with collaboration or peer-to-peer questions and feedback during the investigations.
- The materials provide some teacher guidance and structures for effectively implementing multiple practices. For example, the activities in Chapter 4 of the Learn By Doing STEAM Activity Reader Book provide a clear purpose for the activity and guidance on student grouping in the "Planetary Research" activity, but guidance on how the activities support student mastery of the concept was not provided. Materials do not include guidance about structures for providing verbal or written feedback to students, formative assessments to ensure that students are on track, or ways to support students in planning and organizing their research to develop their reports.

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

- Within the content, the material's illustrations and characters' names reflect the intentional incorporation of diverse community members. The illustrations reflect a variety of genders, skin tones, and hairstyles. The Learn by Doing STEAM Activity Guide intentionally includes illustrations of physically diverse students. The STEAM Activity Guide does not reference characters or students often. The few examples reflect lighter-skinned illustrations.
- For example, information in teacher guidance documents and student materials portrays a diverse group of scientists and engineers as outlined in the science and engineering practices.
- In the STEAM Activity Guide, the names of individuals presented in the short stories equally include male and female names and represent individuals of diverse backgrounds. For example, in the story The Best Materials, the main character is a woman named Marie who is assisted by her son Kevin in finding the best materials. The next story is called Kevin's Review, where Kevin is now the main character. Images reflect the diversity of school communities and match the content. Characteristics vary in images to include race and ethnicity, skin tone, and hair texture. For example, in the story Game, Set, Match, Ray is playing tennis with his friend Erwin. In the illustration, Erwin is African American with a darker complexion and curly textured hair, while Ray is of Caucasian descent.

TPS STEAM into Science Grade 3

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.	DNM

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.

The material partially includes guidance for linguistic accommodations (communicated, sequenced, and scaffolded) commensurate with various levels of English language proficiency as defined by the ELPS but materials do not encourage strategic use of students' first language as a means to 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.

- The Teacher Textbook offers a note for teachers supporting ELL, stating, "If students have trouble communicating their discoveries in writing, either allow them to do so orally or give them a sheet of keywords and phrases to help them." The materials do not extend accommodations according to English Language Proficiency Standards. The materials also do not provide content-specific recommendations to assist students. The STEAM Activity Guide cites the ELPS in the front matter and Amelia Rose Explores unit. The section indicates students are to monitor proper language and seek clarification as needed. It does not reference the standards or supports elsewhere in the component. The materials do not incorporate guidance to address the needs of students at differing levels of English proficiency, even throughout writing activities such as the Think and Craft portion, where students must describe how magnetism can impact other objects. While the materials cite the ELPS and include some teacher guidance, this guidance does not extend to differing levels of English proficiency.
- Materials include some linguistic accommodations for ELLs at the end of each lesson but do not offer authentic linguistic accommodations with various levels. For example, in the Properties lesson, the ELL support suggests, "ELL students may find it difficult to follow discussions necessary for teamwork. Allow ELL to simply go along with the group and then ask direct questions about what they did and why."
- The materials provide some guidance for linguistic accommodations. Each chapter in the Learn By Doing STEAM Activity Reader includes a final vocabulary activity. In Chapter 6, the guidance states "Review the following words and terms with the students using the TPS vocabulary cards.

The objective of this activity is not to be able to sound, spell, and read all the words, as many are complex, but instead for students to understand their meaning(s) and recognize them when spoken. Refer to the Reading Guidance & Vocabulary sections in the Introduction for other information on the decoding of words with the students and methods in which the words demonstrate spelling knowledge, phonetics, and print awareness." This guidance does not contain any specific or stated connections to the ELPS. When using the search tool, ELPS was not found in the Learn By Doing STEAM Activity Reader. There is no evidence in the lessons of linguistic accommodations being sequenced or scaffolded.

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

- The STEAM Activity Guide does not acknowledge using students' first language to support academic development in English. The materials provide general linguistic support, such as in the STEAM Activity Guide - Student Edition, that could assist students if completed in their native language. The materials do not encourage strategically using existing language skills. The resources ask students to read the content-based text and write a story describing the effect of force. Through the Science/ELA Word Wall Activity, students identify "three keywords to support your story and their definitions."
- The materials do not strategically use students' first language to support English language development. For example, in a 3rd-grade lesson on weather, teachers are prompted to "collect data from ELL students' countries of origin to compare." The materials do not consistently encourage strategic use of students' first language as a means to linguistic, affective, cognitive, and academic development in English. For example, teachers are prompted to "use the Spanish glossary cards" to assist students. The reference to this resource is made in the early lessons of the Teacher Textbook and not made again.
- The Learn By Doing STEAM Activity Reader Teacher Edition does not provide any guidance on first language use during the whole group instruction. For example, in Chapter 3, Idea Box 1 states, "As you read this story, ask students to interact by taking notes of the key points. Highlight them, and demonstrate how they could summarize key points in words, by drawing, or both." While this activity does allow for the use of a student's first language, there is no guidance to support its use. Therefore, using a first language is not strategic as a means of linguistic, affective, cognitive, or academic development.

TPS STEAM into Science Grade 3

Indicator 7.4

Materials provide guidance on 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.	PM

Partial Meets | Score 1/2

The materials partially meet the criteria for this indicator. Materials partially 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 some 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 information to share with students and caregivers about the design of the program. For example, the Family/Caregiver Program Guide includes an overview of the components and the sequence of materials intended to be used during instruction. The materials provide information to share with students and caregivers about the design of the program. For example, the Teacher Program Guide states that materials “provide caregivers with access to homework materials (digital access, without charge).” This guide also advises teachers to “provide digital access to caregivers at the start of each term.” and information about the Philosophy behind the program and an overview of the components of the program, including examples of pages taken directly from student materials in Grade 4. The graphic examples include an explanation of each part of the lesson scene. Materials provide detailed information to share with caregivers about the design of the program. For example, the program includes the Family/Caregiver Guide in an online format.
- The Teacher Textbook lists resources throughout the program available to support families. TPS addresses the incorporation of the program introduction, components, information about TPS and its philosophy, family visits, and a deeper dive into storytelling and STEAM as an approach to teaching. The Family/Caregiver Guide details elements of the program and the purpose behind its design. One element described is the use of storytelling to guide instruction. The Teaching Pedagogy-Storytelling and STEAM section states, "The STEAM (science, technology, engineering, arts and math" storybooks were created to provide an "introduction to science in a personally relevant matter as part of a series of curricula aimed to engage students in science presented using several methodologies." The materials go on to describe references to everyday science and the use of a storyline.

TPS STEAM into Science Grade 3

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

- Materials provide resources and strategies for caregivers to help reinforce student learning and development. The Family/Caregiver Program Guide suggests parents/caregivers can offer to "help enforce some of the requirements of the TEKS at home." The only strategy provided includes ensuring that "students wash their hands during classroom investigations" by reinforcing "this safe practice within the home." Parents/caregivers are suggested to have children "tell you why they need to wash their hands frequently and discuss how sanitizer can be used even when they do not have access to soap and water."
- Each lesson in the Teacher Textbook includes an "At Home" section with an activity caregivers can do with their children. For example, after the 3rd-grade lesson "Heating and Cooling," the At Home section suggests caregivers "talk about changes of state with your child as you cook," and "think about things melting and freezing, and liquids evaporating."
- The Food Chain lesson in Unit 5 provides an activity, instructing caregivers to "discuss with your child where their food comes from and how it gets to their plate. Talk about farming crops, animals, fishing, food processing, and packaging." Students take home "an example of classroom material (such as a book)... Have students work with their parents/guardians to use pre-reading supports to enhance comprehension of the written text. Such pre-reading supports may include graphic organizers, illustrations, past knowledge, and experiences."
- The materials provide some guidance for students to develop scientific vocabulary in context. In the Learn By Doing STEAM Activity Reader, the materials offer the vocabulary terms used throughout the chapter. The materials state," Refer to the Reading Guidance & Vocabulary sections in the Introduction for other information on the decoding of words with students..."

- 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.and provides introductory information for caregivers as well as concrete ways caregivers can support learning at home. For example, it provides the strategy of "Ask the students to define specific words and demonstrate them with an action or an example in a sentence."

Materials include information to guide teacher communications with caregivers.

- The materials do not include teacher guidance for communicating with caregivers. The Program Guide indicates teachers should share the Family/Caregiver Guide at the beginning of each term. The materials do not provide guidance for how teachers should communicate specific information about the content for caregivers to support at home. For example, the "At Home" sections provided in the Teacher Textbook include teacher guidance before and during these activities with students, but not communication between the teacher and caregiver. For example, in the 3rd-grade lesson "The Solar System" "provide students with an example classroom material" that can go home. Guidance continues on what the activity should include but does not offer suggestions for establishing a relationship or inviting ongoing communication and partnership between school and home. The Teacher Program Guide includes a section that highlights the "role of the family" which states "how caregivers might communicate with teachers and students throughout the school year" is provided in the Family Guide. The guidance "provides digital access to caregivers at the start of each term" but does not offer

suggestions for teachers to establish a relationship or invite ongoing communication and partnership with caregivers.

- The Teacher Textbook offers the At Home section as guidance with teacher-caregiver communication, with some recommendations. In a chapter focused on general science practice, the recommendations listed in At Home offer only two statements, "Ask your child to describe one scientist from this grade's named scientists list." and "Ask your child what they discovered and how it has helped us all." The guidance is vague and does not assist families with a context or the focused scientists for the grade. Although the materials include supports for Home, they are not specific to content, skills, or progress. The Teacher Program Guide offers a section called The Role of the Family to support teachers' interactions with parents and caregivers. The materials describe the benefits of content reinforcement at home and offer examples of TEKS wording applicable in the home environment. The section also describes resources that can be sent home, such as the ELPs and glossaries. The Teacher Program Guide addresses general recommendations, not specific content sections. It does not provide intentional material to address particular units or lessons.
- Materials do not include teacher guidance for communications with caregivers. The Family Guide "states how caregivers might communicate with teachers and students". The materials do not include information or guidance on how teachers should communicate with caregivers. For example, an Earth and Space lesson on Weather provides an At Home activity where caregivers discuss the meaning of weather symbols found in weather forecasts. The activity is not found in the student materials; the teacher materials provide no guidance or take-home material, digital or print, to send to families. The materials do not include a list of weather symbols or definitions, in any language, for families to reference.

TPS STEAM into Science Grade 3

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

Partial Meets | Score 1/2

The materials partially meet the criteria for this indicator. Materials include some 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 somewhat provide clear teacher guidance for facilitating student-made connections across core concepts, scientific and engineering practices, and recurring themes and concepts. Materials provide some 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 into the course materials.

- The *Teacher Textbook* contains a Scope and Sequence. The materials include a table naming the unit, number of class periods, most TEKS, and "Textbook Reference." The materials also provide a "Pacing Calendar/Year Planner" with a month-by-month view to indicate when to teach content and the TEKS taught within the course materials, as well as when to spiral and review content throughout the year. The Scope and Sequence includes the TEKS addressed through grade 3,the scientific and engineering practices (SEPs), and recurring themes and concepts (RTCs) . The TEKS 1–5 Content Guide outlines which SEPs are aligned to lesson components.
- The material's Scope and Sequence shows the correlation between the content regarding the use of natural resources and SEPs addressing recurring strands and science and social ethics decisions. However, subsequent units do not list the remaining SEPs. Neither the Scope and Sequence nor the Pacing Calendar identify the application of the RTCs. The *Learn By Doing STEAM Activity Reader Book Teacher Edition* – Essential Content Guide lists Science, Math, and ELAR skills by chapter. The Essential Content Guide does not indicate spiraled science core content or review opportunities. Materials include an assessment generator teachers can use for developing spiral reviews of content.

TPS STEAM into Science Grade 3

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

- Materials do not provide clear teacher guidance for facilitating student-made connections across core concepts, science and engineering practices (SEPs), or recurring themes and concepts (RTCs). The introduction of the *Teacher Textbook* provides evidence of instruction. However, only the core concepts are referenced beyond Unit 1. The Essential Content Guide found in the *Learn by Doing STEAM Activity Reader Book Teacher Edition* provides a list of different science concepts that are found in each of the chapters along with reading and math concepts addressed. Materials list concepts, scientific and engineering practices, and recurring themes and concepts in the TEKS 1–5 Content Guide. The TEKS 1–5 Content Guide does not provide teacher guidance on facilitating student-made connections.
- The materials do not l provide clear evidence of connections made between core concepts, SEPs, and RTCs. Materials include an Investigations piece in the lesson plans, where students make connections to scientific and engineering practices. However, the materials do not include any teacher guidance for facilitating the connections.

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. Neither the Scope and Sequence nor Pacing Calendar references spiraled TEKS for review or core concepts for reteaching.
- Materials provide some suggestions for different knowledge and skills that are spiraled in through different activities and stations. The Additional Essential Content Guide in the *Learn by Doing STEAM Activity Reader Book Teacher Edition* provides a correlation of where core concepts are spiraled throughout the year. For example, the Chapter 1 lesson "Hit the Ball" provides correlations between Science "exploring the effects of force," Math "place value," and ELAR "text comprehension and discussion." Also, the *Teacher Textbook* provides connections to scientific practices as students conduct investigations, such as having students select the appropriate graphic organizer for data collected during a series of stations.
- The Additional Essential Content Guide in the *Learn by Doing STEAM Activity Reader Book Teacher Edition* provides a correlation of various science concepts being spiraled in throughout the year. In the *Teacher Textbook*, connections are made to the scientific and engineering practices 4A and 4B as students decide which graphic organizer is most appropriate for the data being collected in a series of stations. For example, a Chapter 8 lesson provides correlations between Science "energy flow in a food chain," Math "determining unknown whole numbers in multiplication and division problems," and ELAR "vocabulary." In addition to a lesson on explaining the impact of scientific discoveries, students work through a series of stations and select an appropriate graphic organizer and explain why it is the best way to show information.

TPS STEAM into Science Grade 3

Indicator 8.2

Materials include classroom implementation support for teachers and administrators.

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

Meets | Score 2/2

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

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

Evidence includes, but is not limited to:

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

- Materials provide overview documents to support teachers in understanding how to use all materials. In the Assessment Guide Teacher Edition, teachers can reference lesson plans with a sequence and pacing for lesson implementation that includes activity directions and discussion topics. Materials include directions for how to implement the lesson plan, including using given scaffolds and enrichment activities for the lesson. Materials also include a Teacher Support component within the Online Library of the learning platform. Supports include detailed plans for the delivery of lessons.
- The materials include an “Introduction” in the *Teacher Textbook* to support teachers in the first steps of using the materials. The textbook component includes expository text aligned to grade 3 TEKS. It also includes research-based instructional strategies such as cues, questions, and advance organizers, generating and testing hypotheses, and scaffolding instruction which are used in inquiry-based investigations called Science Is a Verb. The *Teacher Textbook* also includes

a project-based lesson that offers support to teachers by providing a hands-on enrichment activity with easy implementation, and differentiation tactics for special populations.

- The materials offer strategies to support student learning with the text through the use of literacy strategies. The *Learn by Doing STEAM Activity Reader Book* describes after- and during-reading discussions with the students, engaging them to use their new vocabulary expressively. The *Learn by Doing STEAM Activity Reader Book Teacher Edition* includes Idea Boxes that recommend class discussion and content extensions. Instances include guidance to connections between text describing energy and the importance of energy in everyday life. Another Idea Box suggests mind maps to visualize examples of stored energy. Also, the materials include references to support their activities such as seen in the "Third Grade Air Balloon," "Bowling Balls," "Race Cars," and "Frogs." The article, "Implementing STEAM in the Early Studenthood Science Classroom," follows the activity and several other resources.

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

- Materials in the *Teacher Textbook* and standard correlations are provided through scaffolding information across grade levels K–5. The correlations showcase what students should already know and are projected to learn throughout the lesson, as well as in upcoming grade levels. The Scope and Sequence Pacing Plan provides an annual view of how to deliver content throughout the year. The Scope includes a unit overview where the TEKS are aligned to each lesson.
- The Appendix of the *Learn By Doing STEAM Activity Reader Book Teacher Edition* lists chapters within the program and correlating science standards. The Appendix also includes a chart listing chapters and correlating Science, Math, and ELA skills students use, but no TEKS are listed in this portion. The Teacher Program Guide includes vertical and horizontal alignment information within the Learn By Doing component.
- The materials include cross-content connections, such as the Science/ELA Word Wall Activity. In this connection, students use the text to describe properties and identify key features of the story. The materials provide curricular connections between Science, Math, and ELAR, organized by chapter. The appendix lists each core content aspect, such as "construction and deconstruction of fractions," and indicates which section addresses it. In the *Learn by Doing STEAM Activity Reader Book*, the materials offer reading guidance to support students' text analysis and comprehension.

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

- Materials include a list of equipment and supplies needed to support instructional activities. The Assessment Guide Teacher Edition provides a list of materials needed for each portion of a lesson in the lesson. For example, materials include a list of supplies students will need to use to conduct an investigation testing magnetism. The materials do not include a comprehensive list of materials found in one specific location. However, teachers can view a list of materials needed for specific lessons in the *Teacher Textbook* in the different investigations. For example, a lesson to support models of the earth details items to create the model, including bread, peanut butter, and a foam meat tray. In a lesson testing the physical properties of solids, liquids, and gases include a comprehensive list of equipment and supplies needed for this task: similar-sized cups or mugs made of different materials, hot water, five cardboard lids, a timer, and a thermometer.

TPS STEAM into Science Grade 3

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

- The materials include a section in the *Learn By Doing STEAM Activity Reader Book* titled "Safety in the Classroom." The "Safety in the Classroom" section references hand washing, the use of safety equipment, and the appropriate using technology. The materials outline activities with preparation and activity considerations. A section titled "Activity" refers teachers to local school safety procedures, such as with the use of hot plates. Specifically, "Please implement your school's safety procedure when running this activity as the students will be working near hot plates." The instructional materials include a section called "Idea Box," which provides recommendations for implementing the lesson. Additionally, the final part of the box reminds both students and staff to follow safety policies.
- The materials provide teacher guidance for safety practices during the "Working Safely and Responsibly" lesson in the Assessment Guide Teacher Edition. The lesson provides opportunities for teachers to explain the importance of safety equipment such as safety goggles and expectations for being safe during an investigation. Materials provide some teacher guidance for safety practices in the *Teacher Textbook*. For example, in the lesson, teachers guide a discussion with students about safety for an investigation. This introductory lesson should take place at the start of the program of study so students can practice these ideas throughout the remainder of the year.

TPS STEAM into Science Grade 3

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 and 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.

- The materials include guidance on scheduling considerations for covering required science content for grade 3. Materials provide support for scheduling considerations with the days provided for unit instruction. The Online Pacing/Year Plan includes a sample calendar to identify the instructional days needed for each unit. This pacing calendar also includes class days designated for revision, assessment, and reteaching. The Scope and Sequence document includes a column with the number of class periods, noted as 50 minutes needed for instruction. The materials include the number of days required compared to the total instructional days in the year. The monthly calendar support teachers as they schedule upcoming instruction.
- The Lesson Plan provides time stamp recommendations for the introduction, textbook work, investigation, and summary. The *Teacher Textbook* includes the time required for a lesson on the conservation of natural resources as needing 150 minutes or three 50-minute class periods. The materials include guidance on scheduling considerations for covering required science content for grade 3. For example, the Assessment Guide Teacher Edition includes the overall time required for a lesson on the use of science tools during investigations as needing 100 minutes or two class periods. In addition, a more broken down recommendation for different components within the lesson is provided, including the introduction requiring 30 minutes, textbook work needing 20 minutes, a minimum of 30 minutes for hands-on investigation, and 5 minutes for lesson summary.

TPS STEAM into Science Grade 3

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

- The grade 3 materials provide guidance for the implementation of the sequence of content that is recommended to be taught that is consistent with the developmental progression of science. The Scope and Sequence found in the *Teacher Textbook* provide a suggested sequence of units that follows the sequence of reporting categories outlined in the knowledge and skills (TEKS) for grade 3 science. For example, the lesson introducing mixtures in the *Teacher Textbook* builds on earlier learning of the physical properties of matter as students create mixtures based on the physical properties of different objects. For example, students complete a performance task after instruction on changes in the state of matter that occurred.
- The materials include a section called "Activities and Pacing" that describes the components of each chapter. It recommends teachers return to activities at a later time if students do not have the skill sets for mastery. The Appendix in the *Learn by Doing STEAM Activity Reader Book* breaks down the science concepts addressed in each chapter. Teachers can review the entire unit for a progression of content development. The Additional Essential Content Guide provides an alternate instructional sequence while maintaining an appropriate content progression.
- Materials in the *Teacher Textbook* strategically sequence the lessons on safety and equipment before students learn content. For example, a lesson on tools is the first lesson in the *Teacher Textbook*, following a series of lessons on Science Safety, then enters lessons on Scientific and Engineering Practices (SEPs), and finally, lessons on Matter and Energy. The Pacing Calendar in the materials from the *Teacher Textbook* offers options for adjusting the time spent on particular units without disrupting the sequence of content.

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

- The Pacing Plan/ Year Planner includes a complete August-May view reflecting how the course fits within a single school year. The STEAM Activity Guide includes a "vignette" activity and provides a day-by-day description of each activity. The breakdown informs teachers' decisions to prioritize lesson components or adjust due to time constraints. The Student Activity Guide includes a table of contents indicating the types of activities within the resource. Activities include art projects, word walls, natural science STEM projects, and literacy components.
- The materials included in the *Teacher Textbook* include units, lessons, and activities for a full year of instruction. For example, the Pacing Plan includes 38 weeks of total instruction, 30 weeks of new instruction, and 8 weeks for revision, assessment, and reteaching. This allows room for adjustment to local time and scheduling constraints.

TPS STEAM into Science Grade 3

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 sometimes supports and sometimes 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 learning. In the Learn by Doing Steam Activity Reader Book, digital materials are small and only zoom to 300%. Materials are too small to read at 100% on a personal computer and require zooming. When the user clicks on the material, it automatically zooms in to 250% or out to 100%. There is a slider to allow adjustment between 100% and 300%; however, it could be more user-friendly, and some students must zoom in more than the material allows.
- Materials do not include links or guidance to show what is next or when to stop within a chapter or section. Chapters organize the STEAM Learn By Doing Activity Reader Student Edition. However, the chapter name does not always identify the topic, and the topic is not identified elsewhere. For example, Chapter 5 is titled “The Mystery Artist!” and Chapter 6 is titled “Beneath My Feet” neither of which prepares students for the text they’re about to read.
- The Student Textbook does not have the appropriate amount of white space to support learning. In the sections where students are reading, the text is too close together, aside from occasional pieces of clipart that are not always relevant to the text. For example, in the section Name the Scientist, the text fills nearly all the page space with only a few lines of white space at the very end of the two-page reading passage. This continues in a later section where the text is reviewing different types of charts and there are no bolded headings or enough white space to differentiate the text for each type of chart so that students can visually process the information effectively. Also, In Chapter 8, National Park Field Trip - Tadpoles and Frogs, of r the STEAM Activity Reader Book, some images have some space around them, such as the clipart of the

tree. However, the image of the prairie dog has the text right up against the image which makes it harder for the reader to process the text and visuals.

- The materials do not provide a design that supports student learning in the Learn By Doing STEAM Activity Reader Book. For example, in the Reader Short Story - Sharks Teeth!, some text from the story is larger, bolded, and in a different font type from the rest of the text. This text is usually dialogue, but not all the dialogue is formatted like this, so students need to figure out why this information is bolded. Some of the images provide captions, but sometimes these are in a smaller font like the majority of the text, but other times, it is larger, bolded, and in a different font type. The lack of consistency distracts the reader from pulling information from the text.

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

- The materials do not provide age-appropriate pictures and graphics that support student learning. The majority of images in the Learn by Doing STEAM Activity Reader Book are clipart of various styles. In Chapter 8 National Park Field Trip - Tadpoles and Frogs, There is a cartoonish clipart of a scientist searching in a wooded area next to a more modern clipart of a tree dropping its leaves. On the next two pages of this chapter, there is a clipart of bird migration, but it's difficult to see that there are birds in the image, and on the next page there is a frog in a food chain that appears to be smiling, which distracts the reader.
- The materials include some graphics that are visually distracting. For example, in a project-based lesson for TEKS 3.8B, in The Science section, there is an image of an alien driving a car. This does not support learning and is visually distracting from the content students are supposed to be learning in this section.
- The materials include some pictures that do not support learning. For example, in The Science section of the lesson for TEKS 3.9A, there is an image of the Sun, Earth, and Moon System. This is a clipart image that depicts the Earth as extremely close to the sun and shows the Moon as being equally distant from Earth. This same image appears later in the lesson, The Solar System.
- In the Student Textbook, almost none of the photographs or clipart include captions explaining what it is or how it relates to the text, which misses an opportunity to support learning.

Materials include digital components that are free of technical errors.

- The materials include digital components that are free of technical errors. The STEAM Activity Guide includes activities that are free of inaccurate content materials or information. The materials are also free of wrong answers to questions asked. For example, the STEM activity "Make it Solid" includes accurate information about how most metals and water behave differently when changing from liquid to solid forms.
- The materials are clear of errors in the STEAM Activity Guide. For example, in the Learn by Doing STEAM Activity guide Chapter 1, teacher digital materials are free of spelling, grammar, and punctuation errors. In the Teacher Textbook, Life Cycle, teacher digital materials are free of inaccurate content materials or information. Resources include content-related text, assignments, and sample responses. The materials provided correct answers with appropriate teacher guidance.

TPS STEAM into Science Grade 3

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.	No
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 not intentionally designed to engage and support student learning with the integration of digital technology.

Materials do not 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.

- No, materials do not integrate technology and tools that support student learning. Although the materials include online assessments in the Interactive Assessment Tool, materials do not integrate digital technology and tools that support student learning and engagement. The materials do not include opportunities for learning through video and audio clips, web links, photos, games, simulations, or data sets.
- The materials include tasks that require students to access online resources. Materials do not provide specific links or guidance for student tasks. For example, in a “Science Makers” task from the Assessment Guide, students are to use “the internet and other reference materials” to create an illustrated account or poem about the silver eel. Materials do not include specific guidance for students to use the internet for research. A Literacy Challenge in the Teacher Textbook suggests using the Internet or other resources for students to investigate what gasses make up the air. Materials do not include specific guidance for students to use the internet for research.
- Some lessons use technology as an optional resource. A homework activity in the Teacher Textbook states, “Ask students to look at news channels on TV and the internet and to read newspapers to find out about recent volcanic eruptions, earthquakes, and landslides. Make a

display of information about these events." Materials do not provide specific resources, such as appropriate websites for students to reference.

- The Learn by Doing STEAM Activity Guide includes embedded tools, such as variable font size, text-to-speech, annotation, and highlighting. However, materials do not include the same features in the student workbook. Materials do not integrate digital technology and tools that support student learning and engagement.
- The STEAM Activity Guide includes a description of Digital Frog activities but without the detail needed to determine engagement. For example, students take a tour of the desert and then explain. The Digital Frog Library is not available for review.

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, the materials do not integrate digital technology to support student engagement with science and engineering practices, recurring themes and concepts, and grade-level concepts. In the Teacher Textbook, chapter Earth and Space lesson, teacher guidance requests an optional still or video image of day or night and seasonal changes. Materials do not include these suggested images. Later in the unit, students talk about the sky. Materials direct teachers to provide a video or still image of the sun so that the students do not look directly at the sun. The lesson does not reference a location for the video or still image.
- Although the materials include online assessments in the Interactive Assessment Tool, they do not integrate digital technology to support student engagement with the science and engineering practices, recurring themes and concepts, and grade-level content. Materials do not include interactive resources for instruction, such as videos or interactive labs.
- Materials refer students to outside sources, such as websites, for tasks. For example, an investigation in the Teacher's Textbook asks students to collect local weather data to draw conclusions about the weather. The lesson plan offers the National Weather Service website to locate data if weather tools are unavailable. The investigation takes place over several weeks. While the lesson does not directly mention recurring themes, questions in the investigation reference using patterns to predict weather and explain cause-and-effect relationships. The lesson relies on the use of the internet but also states students could use other resources, making technology integration optional. The Learn by Doing STEAM Activity Guide, Chapter 4, allows students access to their school's internet and books to research a planet. Materials offer a resource link. The digital tools are not provided within the materials.
- In a "Science Makers" task, students use the internet to view a video from the History Channel website about the history of the Moon. Students then "research how an ancient or current civilization uses or used the Moon for cultural purposes." Students then create a poster "detailing the civilization and its uses of the Moon." Materials do not include further detail to support how the materials can or should be used. The Intervention Focus Tutorial provides opportunities for students to obtain information using digital tools. This digital resource allows students to engage with content that is broken into bite-size chunks rather than in the physical text.

TPS STEAM into Science Grade 3

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

- No, materials do not integrate digital technology that provides opportunities for teachers and/or students to collaborate. 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. Materials indicate all online resources are separate links and not interconnected, thus preventing digital collaboration among students and teachers.
- The materials provide general information to recommend activities for students to complete, but not necessarily with collaborative practice. For example, to "choose a character to research the country from which they are from." Materials provide no additional details to assist teachers with designing intentional collaboration.
- The Interactive Assessment Tool allows teachers to view student responses digitally but does not allow for collaboration between teacher and student. The Intervention Focus Tutorial can be shared between teacher and student to support student learning. However, this tool does not provide an opportunity for teachers and/or students to collaborate.
- The Teacher Textbook includes an investigation where students could use the internet to research environmental changes such as floods, droughts, or tsunamis. Teacher materials state, “Students will use textbooks and the internet….students will fill in the information on the textbook pages. If you choose, this product could be extended, with students creating either a class wall display or a computer presentation. While materials allow for integrating digital research and collaboration with digital tools, they do not provide specific guidance to ensure collaboration through digital tools.
- The materials do not recommend platforms, links, or resources on how those digital suggestions can be accessible to students and teachers. 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.

- Materials do not indicate which operating systems they are compatible with. However, the online materials are accessible via a computer and a mobile device.
- The materials recommend the student use the internet for research-focused activities. The Internet is accessible from many types of devices and learning management platforms. Digital materials are accessible with multiple devices. For example, iPads, PCs, Apple computers, and smartphones can access the materials. However, not all devices provide a user-friendly view to support usage. Teachers and families do not have access to this information within the materials.
- The digital resources for teachers, such as the Online Library - Reader Activity Book Library, can be accessed through an internet browser. They are available on any device with internet access, including cell phones. The resource is the same across grades 3 through 5. The materials do not provide information on compatibility with learning management systems to assign specific text for at-home or in-class use. Materials do not provide examples or information on student and caregiver versions of the digital resources. The digital resources for teachers, such as the Online Library - Alaska resources, are web-based and can be accessed through an internet browser. The resource includes printed materials and music samples. The materials do not provide information on compatibility with learning management systems to assign specific content for

at-home or in-class use. Materials do not provide examples or information on student versions of the digital resources.

TPS STEAM into Science Grade 3

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.	No

Not Scored

Materials do not meet the criteria for this indicator. Digital technology and online components are not developmentally and grade-level appropriate and do not provide learning support.

Digital technology and online components are not developmentally appropriate for the grade level and 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 not 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 are not developmentally appropriate for the grade level and align with the scope and approach to science knowledge and skills progression. Materials do not provide a rationale for the age-appropriateness of digital and online components in the Learn by Doing STEAM Activity guide. Materials state, "If the activities require skill sets that are not at the level yet mastered by the students, return to them later when each student is ready." Materials provide information that identifies how online and digital components align with grade-level science knowledge and skills. For example, materials provide an Additional Essential Content Guide that lists the TEKS correlation within each chapter.
- The materials reference Digital Frog resources throughout the STEAM Activity Guide, the Parent/Caregiver Program Guide, and the Teacher Program GuideThe “Science Makers” task on the Moon provides a suggested source found on YouTube when searched and suggests that students “research the history of the Moon” if the source is unavailable. Materials provide minimal information that identifies how digital components align with grade-level scope and approach to science knowledge and skills progression, for example, in a “Science Makers” task on life cycles found in the Assessment Guide. The student task expectation is addressed at the top of the page. No further information provides how to identify online resources aligned with grade-level science knowledge and skills.

- Materials provide some activities that are grade-level appropriate with proper guidance but do not support the proper supervision of internet use. For example, an Amelia Rose Explores lesson asks students to create a poster collaboratively, showing five examples of one form of energy. In the accompanying text, students identify what sources they use to complete the task. While the task does not explicitly state to use the internet, the materials provide no guidance on grade-level-appropriate procedures for internet use.

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

- Materials do not provide teacher guidance for the use of technology to support or enhance student learning. For example, the Teacher Textbook prompts the use of the Internet to research advice about wildfires from the California Department of Public Health. Students use the information to design a home that can withstand wildfires to an extent. The materials do not provide a website for teachers and students to reference, relying on online search tools. The materials do not provide guidance on what information should be obtained from online websites.
- The Teacher's Textbook prompts the use of the Internet during a literacy project on fossils. Students create a detailed project book about fossils. One of the pieces of the project includes the optional use of technology. The guidance states, “Provide students with access to alternative resources such as the internet, online videos, or other texts. The materials do not provide specific websites, relying on the teacher to find alternate resources.
- Materials don't provide clear instructions and tutorials within the teacher platform on how to use the embedded technology in the Learn by Doing STEAM Activity Guide. There is no embedded technology. Materials state, "Please refer to your school's computer safety policy for work that involves students using computers and the Internet."
- Materials do not provide specific teacher guidance for embedding the technology within lessons and assessments. The Learn by Doing STEAM Activity Guide has Idea boxes within the lessons that reference ways to enhance the lesson. Materials do not identify or provide available technologies or hyperlinks.
- Materials provide a video for teacher guidance on the interactive software tool and the assessment generator. Materials do not provide additional videos for resources 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.

- No, materials do not provide parent and caregiver resources for supporting student engagement with digital and online components. Materials state, "TPS Publishing Inc. provides parent digital access to family to families for all homework assignments, and to the list of keywords and definitions." Materials state that the Family/Caregiver Guide provides guidance for parents and caregivers about how to use digital materials. However, the Navigation Guide is designed for teachers, not families. The Navigation Guide shows how teachers can access the textbooks, Assessment Database, Interactive Assessment Tool, and Intervention Focus Tutorial. The guide does not include how to support student engagement with digital technology.

TPS STEAM into Science Grade 3

- The resources do not provide specific guidance for parents or family members to access resources. The materials only offer a short description of Digital Frog and Alaska Library, the two digital components of the TPS program. The Family/Caregiver Guide states that caregivers are provided with access to “homework materials (digital access);” however, resources for how this information can be used to support student engagement are not provided. The Family/Caregiver Guide includes a “Navigation Guide” for online resources. The materials include a labeled image to assist in navigating the layout of the online textbooks to support student interactions with the different components. The materials do not include suggestions on how this resource can be used at home to support student engagement.
- Materials provide a letter with tips for families on how to support appropriate student engagement with digital and online components. For example, materials provide the Family/Caregiver Guide explaining the process of State adoption, TEKS, and the research behind program content. The guide states materials "provide parents with digital access to families for all homework assignments." Materials do not include information on how to access the resources. Materials provide an e-letter that provides online access to materials, resources, and activities to reinforce student learning and development. Materials state, "Teachers are to provide digital access to caregivers at the start of each term," but it doesn't elaborate on how teachers are to give out that information.