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

Section 3. Knowledge Coherence

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

Section 4. Productive Struggle

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

Section 5. Evidence-Based Reasoning and Communicating

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

Section 6. Progress Monitoring

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

- The assessments are partially clear and easy to understand.

Section 7. Supports for All Learners

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

Section 8. Implementation Supports

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

Section 9. Design Features

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

Section 10. Additional Information

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

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Indicator 2.1

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

1	Materials provide multiple opportunities for students to develop, practice, and demonstrate mastery of grade-level appropriate scientific and engineering practices as outlined in the TEKS.	M
2	Materials provide multiple opportunities to make connections between and within overarching concepts using recurring themes.	PM
3	Materials strategically and systematically develop students' content knowledge and skills as appropriate for the concept and grade level as outlined in the TEKS.	M
4	Materials include sufficient opportunities, as outlined in the TEKS, for students to ask questions, 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

Partial Meets | Score 2/4

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

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

Evidence includes, but is not limited to:

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

- Grade 3 materials in the *Learn By Doing STEAM Activity Reader Book - Grade 3 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 Science is a Verb (SIAV) and a lesson in the *Teacher Textbook - Grade 3 Science* 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 - Grade 3 Student Edition* 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 includes a section titled Scientific Method, where the materials provide a linear diagram 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 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 recurring themes.

- Materials include opportunities for students to make connections within, but rarely between, overarching concepts using recurring themes. Most lessons provide connections to the recurring themes within concepts. A lesson on ecosystems in the *Learn By Doing STEAM Activity Reader Book - Grade 3 Teacher Edition* provides teacher guidance to support student understanding of systems and the interdependence in the function of the system. For example, students investigate cause-and-effect relationships and how they are identified and explain the change in ecosystems. However, there is no connection made between ecosystems and other concepts, such as swings/wagons (TEKS 3.7B) or the solar system (TEKS 3.9A).
- Materials include some opportunities for students to make connections within, but not between, overarching concepts using the recurring themes. Most lessons provide connections to the recurring themes within concepts. Lesson 1D - TRAD - Tools in the *Teacher Textbook - Grade 3 Science* provides teacher guidance to support student understanding of the relationship between the structure and function of science tools. However, there is no connection made between the structure and function of science tools and other concepts, structures and functions of animals (TEKS 3.13A), or the structures and functions in swings and wagons (TEKS 3.7A).
- The materials provide some connections between and within overarching concepts through the narrative texts in the *Learn By Doing STEAM Activity Reader Book - Grade 3 Teacher Edition*; however, while the text weaves stories of different science disciplines together, this doesn't equate to an opportunity because the direct connections between the concepts are not articulated fully by the materials, either by questions posed to students, or guidance provided to the teacher to make the connections.

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

- 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 - Grade 3 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 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 - Grade 3 Science* 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 - Grade 3 Science* 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 - Grade 3 Science* also demonstrates how the content is designed to develop and build student content knowledge using a Scope and Sequence that explains 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, and engage in problem solving to make connections across disciplines and develop an understanding of science concepts.

- The *Learn By Doing STEAM Activity Reader Book - Grade 3 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 SEPs by designing solutions and investigating the efficiency of the design. The activity in the *Teacher Textbook - Grade 3 Science* 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. 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 - Grade 3 Science* 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 - Grade 3 Student Edition* provides opportunities for students to conduct investigations and engage in problem-solving to make connections across disciplines. For example, in the Crank it Up activity, 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.

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Indicator 2.2

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

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

Partial Meets | Score 2/4

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

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

Evidence includes but is not limited to:

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

- Materials embed phenomena in some instructional components to support students in constructing, building, and developing knowledge. For example, in the *Learn By Doing STEAM Activity Reader Book - Grade 3 Teacher Edition*, the materials provide narrative texts that provide access to phenomena that provide a springboard for learning. However, in the *Teacher Textbook - Grade 3 Science,* most of the chapters begin with Teacher Guided Questions to Inquiry, which provides a series of questions for the teacher to ask the students to begin the learning cycle. While the questions are designed well, they are not a replacement for observing phenomena.
- Materials provide opportunities for students to develop, evaluate, and revise their thinking as they define problems. In the *Teacher Textbook - Grade 3 Science*, some project-based lessons center around phenomena. Students then design solutions. However, the ideas presented for problems to be solved are not phenomena-inspired ideas. They are problems presented by the teacher.

- The materials provide problems for students to address; however, the problems are often embedded with a specific expected outcome provided by the materials and not created by the students, making the application and performance of engineering practices less than authentic. For example, in Chapter 3 of the *Learn By Doing STEAM Activity Reader Book - Grade 3 Teacher Edition*, students are provided context for moving large objects with other objects. The materials provide some background context for this activity by sharing with students the difficulty of and mystery surrounding the movement of objects, such as Machu Picchu in Peru and Stonehenge in England. However, the materials simply state the problem is that "students need to move a ping pong ball over a distance of one meter…." There is no authentic problem the students are solving for this activity, the materials simply tell the students to complete the task.
- The materials provide some direct connections to the recurring themes and concepts across disciplines as the TEKS require. For example, there are opportunities for students to consider cause and effect relationships as they relate to pushes and pulls, but there are no opportunities to make a connection to how that also relates to cause and effect with regard to rapid changes in Earth's surface.

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 are first taught and applied in *Learn By Doing STEAM Activity Reader Book - Grade 3 Teacher Edition*. The *Teacher Textbook - Grade 3 Science* content provides Science is a Verb (SIAV) investigations, expository text, and matching activities, followed by STEM and Arts projects in the *STEAM Activity Guide - Grade 3 Teacher Edition*. Assessments then appear in the *Assessment Guide - Grade 3 Teacher Edition* and Assessment Generator. Prior knowledge and experience are 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, build a model of a windmill describing the flow of energy, and then students describe the flow of energy in their homes. Students use their prior knowledge of tools and materials to build a device (the windmill), identify the different types of energy, and identify materials that are conductors and insulators.
- Materials provide teacher guidance about potential student misconceptions. 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 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 phenomena and engineering problems. For example, in the lesson entitled 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 guidance 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 - Grade 3 Teacher Edition*. 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. The related text, *Learn by Doing STEAM Activity Reader Book - Grade 3 Teacher Edition,* provides Idea Boxes throughout the narrative materials to assist teachers in understanding the concepts and goals.

- 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.

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Indicator 3.1

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

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

Meets | Score 6/6

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

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

Evidence includes, but is not limited to:

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

- Materials introduce content through the text in the *Learn By Doing STEAM Activity Reader Book - Grade 3 Teacher and Student Editions*. The *Learn By Doing STEAM Activity Reader Book - Grade 3 Teacher Teacher Edition* provides background connections through the use of Idea Box prompts and dialogue. The narrative stories within the materials prompt students to think of examples demonstrating content, prior learning, or previously taught units. The text uses a story-based approach where character dialogue introduces, teaches, and connects content. The first lesson component in the *Learn By Doing STEAM Activity Reader Book - Grade 3 Student Edition* 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 also provide scaffolding information of previous and future learning within traditional lessons in the *Teacher Textbook - Grade 3 Science*.

- Materials are aligned and provide connections to prior knowledge. Materials offer a K-8 program and provide a grade-level vertical alignment document demonstrating how students build and connect knowledge across grade levels. The Teacher Supports show how the materials are vertically aligned. The document titled Horizontal and Vertical Alignment Information states, "As students progress within each grade, the STEAM storybooks are the first level in a series of TPS curricular materials, horizontally aligned to allow the students to engage in a curriculum that builds on knowledge and skills aligned with the Texas Essential Knowledge and Skills. "Materials list "Scaffolding Information" within the vertical progression for the traditional lessons in the *Teacher Textbook - Grade 3 Science*. The Vertical Integration Table for the *Learn By Doing STEAM Activity Reader Book - Grade 3 Teacher Edition* provides citations for lessons that include specific TEKS and shows the TEKS across grade levels.
- In the *Teacher Textbook - Grade 3 Science*, the traditional lessons include 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 covered in the lesson. TPS includes Problem-Based Learning, 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 Book - Grade 3 Teacher Edition*, materials include documents that address what is being taught in each chapter and the connections to math and ELAR.
- In Chapter 4 of the *Learn By Doing STEAM Activity Reader Book - Grade 3 Teacher Edition*, titled The Sun, Solar System and the Weather, 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.

- The *Teacher Program Guide - Grades K-8 Science* describes the lesson progression with each resource. The guide explicitly states teachers begin each unit with the *Learn By Doing STEAM Activity Reader Book - Grade 3 Teacher Edition* and then move to the exploration in the *Teacher Textbook - Grade 3 Science*. The *Learn By Doing STEAM Activity Reader Book - Grade 3 Teacher Edition* introduces all chapters with fictional characters asking and answering questions. Materials intentionally provide content information through the narrative text before students move to exploration. The lesson plans included in the *Teacher Textbook - Grade 3 Science* begin with students engaging with media, discussing what they understood, have seen before, or sparked curiosity. The teacher then begins the instruction, providing steps to complete the investigation if materials offer one.
- Materials are intentionally sequenced to scaffold learning in a way that allows for deeper understanding. For example, in 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 Book - Grade 3 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 - Grade 3 Science* provides a 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.

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

- Materials clearly present grade 3 core concepts, recurring themes and concepts (RTCs), and science and engineering practices (SEPs). The *STEAM Activity Guide - Grade 3 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 concluding, 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. “The *Teacher Textbook - Grade 3 Science* provides teachers with Science Reference Points that connect to student activities and investigations found in the *Student Textbook - Grade 3 Science*. These reference points imply SEPs.
- Materials accurately present grade-level-specific core concepts and SEPs. For example, a grade 3 lesson on weather found in the *Teacher Textbook - Grade 3 Science* 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 materials address the recurring themes clearly and accurately for individual disciplines. The RTC of systems is highlighted repeatedly through the materials with earth and space systems, ecosystems, and systems with respect to force and motion. For example, in the *Teacher Textbook - Grade 3 Science*, “What happens to weather during the year?” students discuss patterns they observe in weather over time, which builds on the narrative text on patterns students experienced in the *Learn By Doing STEAM Activity Reader Book - Grade 3 Student Edition.*

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

- Mastery requirements of the materials are within the boundaries of the main concepts of the grade level. Materials include a broad overview or guidance document detailing increased depth and complexity across the year. Specific lessons include a description in the Scaffolding Information section with a content progression. For example, a Science and Engineering Practices lesson 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 future study. Materials include an objective in the hands-on portion that

states the lesson goals. The same lesson also includes an assessment opportunity. The content describes boundaries and content limitations. An example is a lesson addressing the planets of the solar system, with a stated objective and a prompt to “ask students to tell you the planets in order” as the ending task.

- Materials clearly define the boundaries of content that students must master for the grade level. For example, in the grade 3 expository text Sink or Float, materials include a text explaining how mass and volume affect an object’s density. The grade 3 TEKS expect students to understand relative density, specifically whether objects sink or float in water. 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 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.
- At times, materials appropriately 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.

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Indicator 3.2

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

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

Partial Meets | Score 3/6

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

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

Evidence includes but is not limited to:

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

- The introductory materials in the *Teacher Textbook - Grade 3 Science* state, "Science Concepts, scientific practices, and engineering are introduced in this first component," in reference to the *Learn By Doing STEAM Activity Reader Book - Grade 3 Teacher Edition*. However, neither of these indicates how or when scientific practices or overarching concepts are addressed in each section or within each topic. The inclusion of the Horizontal Alignment Chart, the TEKS 1-5 Content Guides, and pacing guide provide a document that shows when scientific and engineering practices and recurring themes are addressed. This does not support the teacher in understanding how instructional content within the program builds horizontally or vertically.
- The *Teacher Program Guide - Grades K-8 Science* 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 - Grade 3 Teacher Edition, there are several documents that, when used together, provide specific learning.

- Materials include some guidance that supports teachers in understanding how new learning connects to previous and future learning across grade levels in the Scaffolding Information within the lesson. At the beginning of the Traditional lessons, the Scaffolding Information section provides some information on knowledge students should already have, then lists the TEKS for the previous and future grade levels. Listing the TEKS does not provide enough guidance about connection to future learning. Materials provide minimal guiding documents or information that support teachers in understanding how new learning connects to previous and future learning across grade levels.
- The instructional materials include some guiding documents that support teachers in understanding how new learning connects to previous and future learning across grade levels. For example, the *Learn By Doing STEAM Activity Reader Book - Grade 3 Teacher Edition* includes an Essential Content Guide that describes what science, math, and ELAR concepts are taught in each unit. There is a horizontal and vertical alignment information document in the Online Library for Teacher Support. This provides general information and does not help teachers understand how their specific grade-level content connects to prior or future learning.
- The materials provide little support for teachers to understand the alignment guiding the development of the recurring themes and concepts across disciplines as the TEKS require. For example, there are opportunities for students to consider cause and effect relationships as they relate to pushes and pulls, but there are no opportunities to make a connection to how that also relates to cause and effect with regard to rapid changes in Earth's surface. The *Teacher Program Guide - Grades K-8 Science* mentions, "TPS help teachers to facilitate students to make connections between . . .recurring themes and concepts," but there is little evidence in the materials of providing teacher support in understanding these and drawing both horizontal and vertical connections.

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

- Materials contain explanations and examples of science concepts for teachers. For example, the *Teacher Textbook - Grade 3 Science* 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 Textbook - Grade 3 Science*. 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 is for the teachers' information and background knowledge only as they develop their content knowledge.
- Materials contain explanations for teachers on grade-level misconceptions to support teachers' subject knowledge. For example, 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 - Grade 3 Science*. 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 - Grade 3 Teacher Edition* Make It Solid lesson 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 in providing reader activity books and or special education projects.
- The materials provide explanations and examples of science concepts to support the teacher's subject knowledge. For example, the *Teacher Textbook - Grade 3 Science* provides a section titled The Science prior to traditional (TRAD) lessons and a Background and Preconceptions section in the Science Is A Verb (SIAV) lessons. These provide a thorough yet concise explanation of the science contained in the lesson and corresponding activities.

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

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

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

Evidence includes but is not limited to:

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

- Materials support students' meaningful sensemaking through reading, writing, thinking, and acting as scientists and engineers. In the *Learn by Doing STEAM Activity Reader Book - Grade 3 Student Edition,* materials provide reading through storytelling, thinking through the idea boxes, and acting through the design and engineering pieces. There are writing prompts and opportunities to describe what they know or have learned. In the Student Textbook, there are writing activities. Students read like scientists in the *Learn by Doing STEAM Activity Reader Book - Grade 3 Student Edition*. Additionally, this component includes idea boxes to support the teacher in having students think like scientists and stimulate critical thinking through class discussion of the chapter texts. Following each chapter, activities allow the students to act as scientists or engineers investigating and designing engineering solutions. The activity sections also include opportunities for the students to engage in age-appropriate word analysis, writing, and math. 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 - Grade 3 Student Edition*. 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 Reader Book - Grade 3 Student Edition*, "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.
- The *Teacher Program Guide - Grades K-8 Science* provides a philosophy of science teaching and learning as The materials provide teachers with guidance on labs in the "Science is a Verb" explanation found in the Teacher Textbook that partially supports sensemaking. For example, the materials state, "The critical portion of any lab is to have a thorough discussion of the results and student thinking after the experiment is complete. It is suggested you take as much time as the experiment to have this discussion with students. The real learning occurs not from hands-on experiments, but from a deep discussion of the experiment while making connections to the concept they are learning." The guidance supports sensemaking by taking the lesson beyond a hands-on investigation and building conceptual knowledge through discussion.

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

- The materials provide some opportunities to engage with grade-level appropriate scientific texts. However, in the *Learn By Doing STEAM Activity Reader Book - Grade 3 Student Edition*, students are presented with content that is not grade-level appropriate. Chapter 2 in this reader 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 Textbook - Grade 3 Science*, 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.
- Materials provide multiple opportunities for students to communicate thinking on scientific concepts in written and graphic modes. In a 3rd grade Think and Craft activity from the *STEAM Activity Guide - Grade 3 Student Edition*, 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.
- Materials provide multiple opportunities for students to engage in various modes of communication to display understanding. In Chapter 8 of the *Learn By Doing STEAM Activity Reader Book - Grade 3 Student Edition*, 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.

- Materials support students to act as scientists and engineers who can learn from engaging in phenomena and engineering design processes. In Activity 2, "Soil from the Garden," in Chapter 7 of the *Learn By Doing STEAM Activity Reader Book - Grade 3 Student Edition*, 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 - Grade 3 Student Edition*, 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 Book - Grade 3 Student Edition* 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.	M
2	Materials include embedded opportunities to develop and utilize scientific vocabulary in context.	M
3	Materials integrate argumentation and discourse throughout to support students' development of content knowledge and skills as appropriate for the concept and grade level.	PM
4	Materials provide opportunities for students to construct and present developmentally appropriate written and verbal arguments that justify explanations to phenomena and/or solutions to problems using evidence acquired from learning experiences.	PM

Partial Meets| Score 2/4

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

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

Evidence includes but is not limited to:

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

- The materials outline the DAPIC - define, assess, plan, implement, and communicate - process in the *Teacher Program Guide - Grades K-8 Science*. The DAPIC presents a scaffold to help students use evidence to support claims. Teacher guidance in the Program Guide indicates that materials intend for teachers to use the DAPIC in practical investigations for students to communicate claims and solutions based on evidence.
- Materials provide teacher prompts for students during experiments. For example, in the *Learn By Doing STEAM Activity Reader Book - Grade 3 Student Edition, the* activity Ice Water Expansion includes the directions, "Write your hypothesis and then record in writing and drawings your materials, methods, and results. Finally, write your conclusion." The *Learn By Doing STEAM Activity Reader Book - Grade 3 Teacher Edition* for this same activity extends supports that imply the use of evidence to support a conclusion and the need to include data when making a claim. The teacher resources state, "Ask the students if their prediction was correct and what they learned from this experiment."
- In the *Learn By Doing STEAM Activity Reader Book - Grade 3 Student 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?” The conclusion asks students to “record if their hypotheses were correct, and why.”

- The materials provide prompts for students to use evidence to support their hypotheses and claims. For example, in the activity Terrariums from Chapter 8 of the Learn By Doing prompts, teachers have students “record if their hypotheses were correct, and why.” The materials imply that students should 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 Reader Book - Grade 3 Student Edition*, 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.” The materials ask students to record if their hypothesis was correct.

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

- Materials present scientific vocabulary using two representations: 1) embedded in the text with bold letters and 2) key vocabulary charts. Corresponding visuals for the words aren't present for each word. In Chapter 2 of the *Learn By Doing STEAM Activity Reader Book - Grade 3 Student Edition*, 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 and its definition. Additionally, the Program Guide suggests that teachers have students maintain their word walls and create 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.
- The materials provide opportunities for students to apply scientific vocabulary within context. For example, in the *Teacher Textbook - Grade 3 Science*, 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.
- The materials provide opportunities for students to apply scientific vocabulary within context. For example, in the *Learn By Doing STEAM Activity Reader Book - Grade 3 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 can use scientific vocabulary as they complete the scientific method steps 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.

TPS STEAM into Science Grade 3

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, develop a hypothesis, and gather evidence. The *Learn By Doing STEAM Activity Reader Book - Grade 3 Student Edition* asks students to gather weather data from different global locations, analyze it, and write about it. It does not, however, provide opportunities for developing an argument to engage in argumentation with other students or the teacher.
- Materials offer some opportunities for students to defend their arguments. However, there is not a lot of scaffolding or guidance for developing or defending their argument. For example, in the *Teacher Textbook - Grade 3 Science*, 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. Also, the materials provide opportunities for students to develop how to practice argumentation and discourse. The *Learn By Doing STEAM Activity Reader Book - Grade 3 Student Edition* offers Design Engineering Challenges at the end of each chapter. Activity 2 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 for completing the task. The steps are to ask what's the problem, imagine and design solutions, build the solution, test it, improve it, and communicate a successful solution. While they engage in discourse to communicate their solution, they are not involved in the more complex process of argumentation, and there is no evidence that argumentation is integrated throughout the materials.
- 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 Reader Book - Grade 3 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. During the hypothesis portion, students "predict what they expect to see when they place the dye dropper in the ice cold and heated water. Do they expect to see a difference, and if so, why?" 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

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 opportunities for developmentally appropriate discourse to explain a phenomenon or defend a solution to problems; however, these are not arguments based on evidence. 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,

nor does it prompt students to use evidence to develop an argument. Another example is the engineering activity, Moving a Ping Pong Ball, which 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 using an argument using evidence.

- The materials provide some evidence for developmentally appropriate arguments to explain a phenomenon or defend a solution using evidence acquired from learning experiences but sometimes ask for arguments without instruction and support for constructing arguments. 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.” However, this isn’t prefaced with support for constructing an argument with evidence; it is unclear how students will achieve this expectation.
- The *Learn By Doing STEAM Activity Reader Book - Grade 3 Student Edition* offers some opportunities for students to engage in the Scientific Method, including developing a hypothesis, gathering data, and recording and discussing a conclusion; however, it does not provide opportunities for developing arguments based on evidence. The materials provide prompts to help students make connections to the investigation, as seen in the chapter on sound. 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." The materials also 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. There are no student-facing instructions for how to construct an argument based on evidence.

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

Meets | Score 4/4

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

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

Evidence includes but is not limited to:

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

- The materials provide teacher responses to possible students' responses. The materials divide teacher guidance into correct student responses, incorrect student responses, and partially correct student responses. The *Teacher Program Guide* 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 indicate that teachers should respond the same to partially incorrect responses but expect a shorter time frame to resolve misconceptions. Additional suggestions to respond to struggling learners include studying keywords and using them correctly in a sentence, using "an arts project from the *Learn by Doing STEAM Activity Reader Book - Grade 3 Teacher Edition* 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, and then “answers may vary.”

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

- The materials provide 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 grade 3 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 - Grade 3 Teacher Edition* 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.”
- The *STEAM Activity Guide - Grade 3 Teacher Edition* 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.

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

- Materials provide teacher support to prepare for student discourse. In the *Learn by Doing STEAM Activity Reader Book - Grade 3 Teacher Edition*, teachers are prompted to “stress the importance of actively listening to other students during sharing and participating in discussions respectfully.” General guidance for student argumentation and discourse comprehension skills is provided. For example, materials state “Speak coherently about the topic under discussion, employing eye contact, speaking rate, volume, enunciation, and the conventions of language to communicate ideas effectively. Listen and generate relevant questions to clarify and deepen understanding, gain information and make pertinent comments. Work collaboratively with others by following agreed-upon rules, norms, and protocols TPS believes that the teacher's application of the guidance above, together with prompts integrated into the activities, will provide information for the teachers to establish a classroom culture”.
- Guidance is also evidenced for STEM projects appearing in the program within the information in the teacher program guide stating 'This approach is referred to by the acronym “DAPIC” - Define, Assess, Plan, Implement, and Communicate. Likewise, communication may be necessary at any stage of the problem-solving process. The DAPIC model allows for all of these variations.
- Materials provide teacher support in preparing students to engage in discourse. For example, the Scientific Method and Design engineering process section contains multiple guidance comments regarding discussions. The Comprehension Skills sections contain guidance on discussion and argumentation. For example, idea boxes are cited throughout the text as points of collaborative discussion, engaging the children in the topic. The idea boxes are designed to promote questions from the text they have listened to, provide opportunities to evaluate

details, and synthesize and share predictions and inferences This allows a child to modify their understanding of the text read, discuss topics, and determine the basic theme using text evidence.

- Materials 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. 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 provide 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.”

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

- Materials provide 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 - Grades 3 Teacher Edition*, 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.”
- Materials provide teacher support for facilitating the sharing of students’ finding solutions. Materials provide feedback, tips, or examples teachers can use to support students throughout the learning cycle. For example, the S*TEAM Activity Guide - Grade 3 Teacher Edition* 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.” Specific guidance is provided about communication in the *Teacher Textbook - 3rd Grade Science*. It states “Effective science communication is central to education, discussion and scientific argumentation. Not all scientists agree on everything, and when they disagree it is important that they can effectively use data, and current scientific ideas to communicate their reasons for their disagreements. Sometimes scientists must communicate complex ideas to the public. Most members of the public have a lower scientific understanding than a professional scientist, and therefore when communicating with the public it is important to deliver information in a way that can be easily understood. Encourage students to think about what

they have learned in today's lesson and discuss the different ways in which they could communicate what they have learned. You might instruct the class to write a newspaper article, create an educational video, or deliver a presentation. Discuss with students the importance of considering their audience when constructing their presentation. Students may create presentations to deliver to the teacher, each other or their parents/carers. Presentations may be delivered individually or collaboratively". Misconceptions are also provided.

- Materials provide 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 Book - Grade 3 Teacher Edition* 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 Mystery Artist chapter 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 Book - Grade 3 Teacher Edition*. The National Park Field Trip, Rocks, and Soil! chapter 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 - Grade 3 Teacher Edition*. 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 unit asks grade 3 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 - Grade 3 Teacher Edition, teachers ask grade 3 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 - Grades K-8 Science* contains a section called Support Notes for Teachers. Within the Support Notes for Teachers segment are frequently asked questions with answers. Question 4 in this document asks, “Where are the TPS diagnostic, formative, and summative assessment tools?” The responses state that for the Diagnostic assessments, “The interactive software tool provides automated grading for multiple choice questions; Benchmark tests (Level 1, 2 and 3 Assessments) in Online Library - Blackline Master.” 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 - Grade 3 Teacher Edition*, TEKS 12C has open-ended and multiple-choice assessment questions with the answers. Materials include an assessment table in each unit overview that lists all assessments for the unit. 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.
- 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 - Grade 3 Science* identifies the TEKS assessed in formative and informal assessments. For example, the What Have You Learned? section of a grade 3 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” at the top of the page.
- Materials indicate which TEKS are assessed across the breadth of the course. In the *Teacher Program Guide - Grades K-8 Science*, the Progress Monitoring section describes the Focus Questions, Performance Tasks with Rubrics, TEKS by Chapter assessment questions, and Assessment Generator. Under Performance Tasks with Rubrics, the materials state, "For each TEKS, a performance task with a rubric is provided. Grade students and enter results onto the report card." The By TEKS, Chapter assessment questions at the end of each chapter, and the materials note, "The major assessment tools are those in the Online Library - Assessment tools." Under Assessment Generator, the materials say, "Teachers can create, save and print assessments to include chosen TEKS and skill levels. The tests can be personalized by the student or by class. Manual grading is required."

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 Reader Book - Grade 3 Teacher Edition*, the assessments integrate scientific knowledge through informational fiction, science, and engineering practices. In Activity 7, students build a model of the Earth's and Moon's orbits. It focuses on the transfer of heat energy. 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 Reader Book - Grade 3 Teacher Edition*, 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 - Grade 3 Teacher Edition* 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?"
- The materials include assessments that require students to integrate scientific knowledge and science and engineering practices with recurring themes appropriate to the student expectations being assessed. For example, in the *Teacher Textbook - Grade 3 Science*, 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.

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 *Assessment Guide - Grade 3 Student Edition* 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 - Grade 3 Science* 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 Book - Grade 3 Teacher Edition* 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 - Grade 3 Science*, students investigate patterns of motion. The *Assessment Guide - Grade 3 Teacher Edition* 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.	M
2	Materials support teachers' analysis of assessment data with guidance and direction to respond to individual students' needs, in all areas of science, based on measures of student progress appropriate for the developmental level.	PM
3	Assessment tools yield relevant information for teachers to use when planning instruction, intervention, and extension.	M
4	Materials provide a variety of resources and teacher guidance on how to leverage different activities to respond to student data.	PM

Partial Meets | Score 1/2

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

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

Evidence includes but is not limited to:

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

- Materials provide information and/or resources for evaluating student responses in most program components. This information generally appears in red font in teacher-facing resources, such as in the *Teacher Textbook - Grade 3 Science*, which provides guidance in red text for evaluating student responses to every activity/question.
- The *Learn by Doing STEAM Reader Book - Grade 3 Teacher Edition* contains sample student responses to questions investigated during a culminating activity for the content TEKS under the Assessment section. This component also includes the Learn by Doing Assessment Rubric - Grade 3 as a resource for evaluating student responses. Materials include an assessment question or task followed by sample responses that determine mastery. For example, students must 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 - Grade 3 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.

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

- Materials support teachers' analysis of assessment data but lack guidance and direction for responding to individual students' needs based on that analysis.
    - For example, while the Graded Assessment Database offers three levels (Below, At, and Above) to determine measures of student progress, materials lack teacher guidance and direction for using this assessment data to respond to students' needs.
    - The materials include an Assessment Matrix that lists the knowledge statements for core concepts to support tracking overall data for students but lack accompanying teacher guidance for utilizing data in the matrix to drive instruction.
    - The materials contain Intervention Focus Tutorial materials to assist students who are not meeting expectations, but this tool is not directly aligned with assessment data. Materials lack teacher guidance and direction for teachers to use the Intervention Focus Tutorial in response to their analysis of assessment data.
    - The *Assessment Guide - Grade 3 Teacher Edition* offers a range of tools for evaluation and questioning, including multiple-choice and open-ended questions and performance tasks. However, it lacks support materials or resources to help teachers easily analyze and interpret the data they collect.
- Materials lack specific guidance documents and resources to support teachers' analysis of assessment data. The *Teacher Program Guide - Grades K-8 Science* provides a series of actions to take in response to student data that is limited to assigning new assessment questions (higher or lower level depending on student performance), addressing vocabulary, or assigning an art project. This blanket approach within the general teacher guidance document does not meet students' individual needs, which are often more complex.

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

- Materials provide various assessment tools and resources, including embedded questioning in student materials, an assessment guide, and an online assessment generator that can be used to support teachers when planning instruction, intervention, and extensions. The information gathered from the assessment tools helps teachers when planning core science and differentiated instruction. Additionally, the materials extend sample responses and rubrics to assist teachers in evaluating student responses and responding to individual students' needs.
    - The Assessment Generator online tool can be used to create a custom assessment.
    - The *Assessment Guide - Grade 3 Teacher Edition* offers a range of tools for evaluation and questioning, including multiple-choice and open-ended questions and performance tasks.

    - The Graded Assessment Database offers three levels, Below, At, and Above, to support teacher analysis of data.
    - The Assessment Matrix lists the knowledge statements for core concepts to support tracking overall data for students.
- In the *Teacher Program Guide - Grades K-8 Science*, the information provided states, "Level 1 learners will require more time and content from STEM and art projects in conjunction with story books." Level 2 students must follow the original scope and sequence and work on additional projects at home. Level 3 students continue the scope and sequence and can complete the advanced learner content and advanced STEM projects. Benchmark tests determine levels.
- The information gathered from the assessment tools helps teachers plan differentiated instruction. For example, the Learn By Doing Assessment Matrix categorizes students into three proficiencies: Some Proficiency, Approaching Mastery, and Mastered. Also, teachers can use Benchmark and other assessment data to assign below-grade level students Level 1 questions from the Assessment Generator, locating appropriate questions by TEKS, as stated in the *Program Guide*.

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

- Materials provide a variety of resources but lack teacher guidance on how to leverage different activities to respond to student data. Examples of resources included in program components that teachers can leverage in responding to student data include the *Learn By Doing STEAM Activity Reader Book*, the *Student Textbook - Grade 3 Science*, the *Student Journal - Grade 3 Science*, the *STEAM Activity Guide*, the *Assessment Guide - Grade 3 Student Edition*, and the Intervention Focus Tutorial.
- The *Teacher Program Guide - Grades K-8 Science* offers general guidance for using different activities to respond to student data. "Level 1 learners will require more time and content from STEM and art projects in conjunction with story books." Level 2 students must follow the original scope and sequence and work on additional projects at home. Level 3 students continue the scope and sequence and can complete the advanced learner content and advanced STEM projects. Additional guidance in this resource directs teachers to "grade and insert results" for "Focus Questions" and "Performance Tasks" onto the report card.
- The Assessment Guide offers review activities, performance tasks, and reteach assessments to assist teachers with interventions. However, there is no guidance for which activities are used for which students at what time. For example, the materials state, "[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 about when to use this and with which students.
- Additionally, Support Matrices provide teachers with guidance on materials to use when supporting students. The materials do not provide guidance on which specific lessons or activities from the STEAM Activity Guide should be used for level 1 students who score Some proficiency on the Learn By Doing Assessment Rubric with TEKS 3.6A, measure, test, and record physical properties of matter.
- 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 informs 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.

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Indicator 6.3

Assessments are clear and easy to understand.

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

Partial Meets | Score 1/2

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

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

Evidence includes but is not limited to:

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

- Assessments for the grade level contain items that are scientifically accurate, avoid bias, and are free from errors. Materials accurately and correctly present content and concepts for the grade level. Formative and summative assessments include items that present content and examples fairly and impartially with no impact on student performance based on such factors as a student's home language, place of origin, gender, or race and ethnicity. This is evident in the Assessment Generator, which provides TEKS-aligned assessments, and the range of assessments in the *STEAM Activity Guide - Grade 3 Teacher Edition.*
    - For example, 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. The above-level assessment items for forces include accurate examples of how forces, including gravity, magnetism, and pushes and pulls are used.

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

- The Assessment Database contains some visuals. Four of the 100 reviewed questions in the generated exam contain clip art and a chart. Item 5294 uses clip art as answer choices for the question, "Which picture shows water as a liquid?" The images are grainy and dated. Additionally, the third answer choice, an ice bucket with ice exceeds the dimensions of the item format and hangs out of the box surrounding each question. The same characteristics were present for items 5294, 5295, 5296, 5289, and 5290. 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 the *Learn by Doing STEAM Activity Reader Book*, 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 STEAM Activity Reader Book,* Chapter 6, contains clear, colored, labeled pictures of landforms.

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

- Materials provide guidance to ensure consistent and accurate administration of the various assessment tools included in program components. The Progress Monitoring section of the *Teacher Program Guide - Grades K-8 Science* provides guidance on when to administer certain assessment tools. The product has four benchmark tests and guidance for when to give each benchmark. For example, "Benchmark 1 test - to assess natural knowledge at the commencement of term before any program content being taught." Materials guide the teacher on when to administer benchmarks 2-4 throughout the year.
- Materials provide t guidance for the administering items in the Assessment Database tool. The Assessment Database entry screen provides options for teachers to select TEKS-aligned questions, choose the level of questions, and show the answers.
- The *Teacher Program Guide - Grades K-8 Science* provides information on administering and scoring questions from the Assessment Generator. After completing activities in each chapter of the *Learn By Doing STEAM Activity Reader Book*, materials state that "teachers will assess students using Level 1 and 2 questions from the Online Library - Assessment generator or Online Library - Interactive software too . . . These results should be added to the assessment matrix."
- The *Teacher Textbook - Grade 3 Science* provides guidance for administering visual assessments. Materials state, "The Creative Science Curriculum encourages two types of assessment: visual lesson plan activities and quizzes/tests." Materials state that teachers can conduct visual assessments by "watching students perform activities, such as found in STEM Project Editions or Arts Projects."

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

- Materials lack guidance to offer accommodations for assessment tools that allow students to demonstrate mastery of knowledge and skills aligned to learning goals. For example, materials lack suggestions for time, scheduling, or setting accommodations that would allow students of varied needs and abilities to demonstrate grade-level mastery.
- Materials offer a wide range of assessments, allowing students to demonstrate mastery of knowledge and skills aligned to learning goals in various ways, including open-ended responses, projects, performance tasks, and multiple-choice questions. However, materials lack guidance for accommodating students with linguistic, neurodivergent, or other needs on assessments throughout the program.

    - 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 guide teachers to provide oral administration of the assessment or other accommodations, such as blank graphic organizers or access to dictionaries.
- Materials include a means to differentiate assessments according to ability level in the Assessment Generator and provide guidance for using the leveled questions feature in the *Teacher Program Guide - Grades K-8 Science*. This tool allows teachers to select items above or below grade level that align with the standard. While this tool offers a differentiated assessment option that changes the expectation for students to demonstrate mastery, it does not give guidance to offer accommodations on assessment tools included in the program.
- The *Assessment Guide - Grade 3 Teacher Edition* 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.
- The TPS Interactive Assessment Software Tool allows teachers to create and modify questions within the data bank to support differentiated instruction. Teachers can simplify language, as appropriate, and include exemplars for open-ended questions to help identify students needing additional support.

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.	M
2	Materials provide enrichment activities for all levels of learners.	M
3	Materials provide scaffolds and guidance for just-in-time learning acceleration for all students.	M

Meets | Score 2/2

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

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

Evidence includes but is not limited to:

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

- Materials give an overview of recommended targeted instruction and activities to scaffold learning for students who have not yet achieved grade-level mastery in the Support Notes for Teachers section of the *Teacher Program Guide - Grades K-8 Science.* Materials state: “TPS has provided supplements that can be used for after school, reteaching, or additional homework.” The document notes the inclusion of the *Learn By Doing STEAM Activity Reader Book - Grade 3 Teacher Edition* RTI Scope and Sequence, which provides an alternate pacing plan for each grade level. It also states that STEAM activities “act as reteach tools for students who did not master the content with the first two components,” instruction provided through the *Learn By Doing STEAM Activity Reader Book - Grade 3 Student Edition* and textbook lessons for the grade level.
- The Support Notes for Teachers also recommend using the Online Library - Assessment Tools with “students who remain below grade level” or a “student who responds incorrectly.” In these situations, teachers can “choose Level 1 assessment questions for the TEKS being taught…and discuss answer given with student. Determine if there is a misconception and resolve.” The guidance emphasizes the role of science language in causing student misconceptions and recommends that teachers use the science glossary cards provided in the Online Library to review word meanings and use them with students.
- When students struggle with grade-level concepts, materials recommend using the Intervention Focus Tutorial for current and previous grade-level TEKS. Materials state: “Teachers can use more or less of the leveled materials to suit the individual student’s progression. For example, if students are working below or far below grade level due to reading, teachers can use the intervention focus tutorial and choose the grade and appropriate TEKS content that should have been mastered in an earlier grade but was not.”

- Materials include teacher guidance for scaffolding instruction during lessons under the Support headers in the *Teacher Textbook - Grade 3 Science*. This guidance is sometimes generalized for all students and not specific to students with learning gaps. For example, in the Energy lesson, materials state: “Give students specific objects to examine rather than letting them choose the subjects for the investigation. Ensure that the energy involved in each object is very obvious and avoid objects that involve more than one type of energy. For example, choose an electric light (light, electricity) rather than a car (electrical, mechanical, heat, light, sound, etc.).” The Support headers also include general reminders to provide many hands-on investigation opportunities to support students with grade-level mastery.
- Materials also include a Scaffolding section for each lesson in the *Teacher Textbook - Grade 3 Science*, which lists previous and future TEKS to support students with gaps in grade-level knowledge, and a Support Matrix Document listing resources that align with each standard. In the Learn by Doing Scope & Sequence, RTI materials provide recommended targeted instruction and activities for each lesson from the STEAM storybooks.

Materials provide enrichment activities for all levels of learners.

- 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 various activities that appeal to students' interests and abilities. Air balloons, bowling balls, race cars, and frogs lesson consists 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; Activity 8, vocabulary. Each chapter in the *Learn By Doing STEAM Activity Reader Book - Grade 3 Student Edition* 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 Book - Grade 3 Student Edition* provides an initial reading and discussion lesson, followed by a short narrative text and activities for students to complete afterward. The introduction to the materials 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 allows students 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 allows students 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 materials provide scaffolds and guidance for just-in-time learning acceleration in the *Learn By Doing STEAM Activity Reader Book - Grade 3 Teacher Edition.* Each chapter contains several Idea Boxes within the text, giving the teacher prompts and cues to support student understanding. For example, in Chapter 1, Sink or Float, Idea Box 1 suggests that the teacher create a “mind map of examples of solids, liquids, and gases students are exposed to in their everyday lives,” and Idea Box 2 demonstrates the concept “that gas will continue to expand until it fills a container.” Throughout the chapters, these supports serve various instructional purposes outside of just-in-time learning acceleration, including supporting student engagement, helping teachers deliver instructions, and demonstrating scientific concepts.
- The materials contain teacher guidance for strategically targeting learning gaps during first instruction. For example, the materials offer a variety of support materials that can be utilized for varied learner needs, such as picture vocabulary cards and a simplified textbook found in the online resources.
- Just in time content is provided and detailed in the teacher program guide K-8 which advises the online materials available. In the Teacher Program Guide K- 8, under the Support Notes For Teachers, bullet three discusses how the goal of the program is for students to master all TEKS. If students are having a difficult time with concepts, it gives teachers guidance on how to address the students' needs. If students master the TEKS, guidance is also given on how to allow the student to progress and what level of questions to give the student on assessments.

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

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

Evidence includes but is not limited to:

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

- Materials 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 *Learn By Doing STEAM Activity Reader Book - Grade 3 Student Edition*. In a grade 3 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.
- Lessons include authentic tasks in which students use tools to measure and collect data. In the *Teacher Textbook - Grade 3 Science* 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 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 - Grade 3 Science*, 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 - Grade 3 Science* are provided to the whole group. Suggestions are provided for small groups or partners for many of the investigations. For example, the grade 3 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 - Grade 3 Teacher Edition* 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 *Teacher Program Guide - Grades K-8 Science*, 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 - Grade 3 Science* 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 support multiple types of practices (e.g., modeled, guided, collaborative, independent) but provide limited guidance and structures to achieve effective implementation for all TEKS. In the *Teacher Program Guide - Grades K-8 Science*, Support Notes for Teachers provide some detail on how the program starts with the *Learn By Doing STEAM Activity Reader Book - Grade 3 Teacher Edition*, 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 - Grade 3 Teacher Edition* 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 - Grade 3 Teacher Edition. 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 implementing multiple types of practice. For example, in a lesson on types of energy in the *Teacher Textbook - Grade 3 Science*, 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 - Grade 3 Teacher Edition* 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 materials' 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 Reader Book - Grade 3 Student Edition* intentionally includes illustrations of physically diverse students. The *STEAM Activity Guide - Grade 3 Student Edition* does not reference characters or students often. The examples reflect lighter-skinned illustrations.
- 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 *Learn By Doing STEAM Activity Reader Book - Grade 3 Student Edition*, 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.	M

Partial Meets | Score 1/2

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

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

Evidence includes but is not limited to:

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

- Materials list the ELPS in the *Teacher Program Guide - Grades K-8 Science* and note that the content of program components is intended to align with both TEKS and ELPS for each grade level. The Program Components section lists ELL supports as a feature of each lesson in the *Teacher Textbook* and provides examples of excerpts from grade-level lessons. These excerpts indicate that the generic guidance to support ELL students within lessons does not correspond to language domains or proficiency levels. This overview document lacks further information on guidance for linguistic accommodations commensurate with various levels of English language proficiency as defined by the ELPS.
- Materials include guidance for linguistic accommodations under the ELL (English Language Learner) header at the end of each lesson in the *Teacher Textbook - Grade 3 Science.* For example, in the Grade 3 lesson, Tools, the materials list the following suggestions under the ELL header: "Ensure students understand the adjectives you are using to describe tools. Have students think about the words they can use to describe the different tools. Encourage students to think about prior experiences they have had in which they have thought about and discussed tools." Other lessons in the *Teacher Textbook* offer similar suggestions as ELL accommodations. The Grade 3 lesson, Properties, advises teachers that "Students may find it difficult to follow the discussion that is necessary in teamwork. If necessary, allow them simply to go along with what the rest of the group decides, then subsequently ask direct questions about what they did and why." The Weather lesson offers one suggested accommodation: "You could collect data from ELL students' countries of origin to compare to your data." While these suggestions guide

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

- Materials embed the ELPS as learning targets at the beginning of each "Amelia Rose Explores" section in the *STEAM Activity Guide - Grade 3 Teacher Edition*. For example, at the beginning of "Amelia Rose Explores Matter and Energy," materials provide a table with several "cross-curricular second language acquisition/learning strategies," including the following: "Use prior knowledge and experiences to understand meanings in English; Use prior knowledge to understand meanings in English; Use prior experiences to understand meanings in English." Beyond the table listing learning targets at the beginning of these sections, this program component lacks guidance for providing linguistic accommodations within teacher guidance for using activities, science vocabulary, and narrative text.

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

- Throughout the program components, materials encourage use of students' first language and use it as a means to linguistic, affective, cognitive, and academic development in English. Materials primarily offer guidance on native language use through flashcards and translations, as well as some oral responses and discussions.
- Materials encourage the use of students' first language in suggestions under an ELL header in the *Teacher Textbook - Grade 3 Science.* For example, ELL header guidance in the Grade 3 lesson, Tools, materials state: "Use the Spanish glossary cards to assist relevant students." The Spanish glossary cards are available to teachers in the Online Library - Blackline Master - K-8 Science.
- Materials include strategies for supporting emergent bilingual students under the Tips for ELL Students headers in the *STEAM Arts Project Guide K-12* Grade 3 lessons, these suggestions encourage the use of students' first language. For example, the Teacher Text states, "If possible, have students work in collaborative groups where students share the same languages, and ideally, one student is advanced in English. Use visual and tactile models to illustrate elements of each activity and focus on the keywords. You can have students create a journal of words in their first language and in English."

TPS STEAM into Science Grade 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.	M

Meets | Score 2/2

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

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

Evidence includes but is not limited to:

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

- The materials provide the *Family/Caregiver Guide - Grades K-8 Science*, which introduces the philosophy, research-based strategies, program components, assessment information, and a glossary for each grade. Within this resource, the Program Introduction explains the research behind the program content and describes the program's philosophy in easy-to-understand language for students and caregivers. This resource also includes an overview of the components and the sequence of materials intended to be used during instruction. It is available in a digital format for sharing with parents and caregivers.
- Materials include an overview of the *Family/Caregiver Guide - Grades K-8 Science* within the *Teacher Textbook - Grade 3 Science*. This information provides teacher guidance on sharing information about the curriculum with families and caregivers.
- The *Family/Caregiver Guide - Grades K-8 Science* details elements of the program and the purpose behind its design. One element described is practical approaches to teaching and learning science and the benefits of understanding how to "confront scientific arguments, advances, and associated technologies in their daily lives." The materials list everyday science applications that will support students as they grow. The guide continues to address TPS's pedagogical approach, "[using] storytelling as its main strategy," including a reference to research that says, "Students learn best when they enjoy the way a lesson is presented."
- Further, the *Family/Caregiver Guide - Grades K-8 Science* describes research-based strategies considered as TPS developed the program. The materials cite evidence such as "Social lessons improve student learning." and "Students learn in different ways, so the content must be presented that attaches the visual kinesthetic and auditory senses." The research references assist families with understanding the design of the program.

- Additionally, the *Family/Caregiver Guide - Grades K-8 Science* includes links to online materials, and the section included in the *Teacher Textbook - Grade 5 Science* has a guide with the following sections: Program Introduction, Program Components, TEKS, ELPS, Explanation of TEA/SBOE process and [program] approach, Texas Resource Review requirements, Navigation Guide - Online Resource, Information about [program], Progress Monitoring, Family Visits and Teaching Pedagogy - Storytelling and STEAM.

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

- Materials include the *Family/Caregiver Guide - Grades K-8 Science*, a resource designed to facilitate family support for learning. This document references the free digital access that materials provide for families to reinforce student learning.
- The *Family/Caregiver Guide - Grades K-8 Science* provides resources and strategies for caregivers to reinforce student learning and development, stating that "Parents/caregivers can help enforce some of the requirements of the TEKS at home. The work you can complete with your children will vary between assisting students studying new TEKS content and explaining how it applies to home life and practical assistance with safety measures."
- The *Teacher Textbook - Grade 3 Science* lessons include an At Home section with specific suggestions for home reinforcement. For example, this section in the Heating and Cooling lesson offers the following information to be shared with caregivers: “Talk about changes of state with your child as you cook” and “think about things melting and freezing, and liquids evaporating.” Additionally, the Food Chain lesson in Unit 5 asks 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.”
- Materials mention in the *Teacher Textbook - Grade 3 Science* that teachers can share resources like the glossaries included in the program with families, as these are available digitally. Here, materials also reference other resources that can be shared, such as at-home activities in the *Student Textbook - Grade 3 Science*.
- The materials provide information for parents and caregivers about ways they can reinforce learning and development. For example, the materials include a document titled How Teachers and Caregivers are Supported by STEAM Content, which provides introductory information for caregivers and concrete ways caregivers can support learning at home. For example, it provides the strategy, “Ask the students to define specific words and demonstrate them with an action or an example in a sentence.”
- 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 STEAM Content Supports Teachers and Caregivers,” which provides introductory information for caregivers and 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.

- Materials provide the Science Report Card as a teacher resource. This resource includes the following guidance for teacher communications with caregivers: “Please fill in the parent comment section so that we can work together to monitor your child’s progress.” The Science Report Card contains rows and columns for teachers to communicate student progress toward

mastery of science and literacy standards according to four levels: Novice, Intermediate, Expert, and Not Yet Introduced.

- Materials include teacher guidance for communicating with caregivers in the *Family/Caregiver Guide - Grades K-8 Science*. This guidance includes advice for building relationships and sharing digital resources. For example, materials advise teachers to "provide digital access to caregivers at the start of each term" and suggest that teachers "hold a tutorial meeting in which the teacher can step the caregivers through the program, the digital tools, and the access they will receive to use at home."
- The *Teacher Program Guide - Grades K-8 Science* offers additional information to guide teacher communication with caregivers, including suggestions for holding regular meetings and emphasis on the importance of actively working with caregivers. This guidance document states that "teachers may wish to ask various caregivers to come into the classroom to discuss how their job roles utilize various STEAM approaches" and affirms that doing so "will also enable caregivers to communicate with the students and feel valued within their child's education." It also guides teachers to "acknowledge and show gratitude for the time caregivers give to help the students."

TPS STEAM into Science Grade 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.	M
3	Materials provide review and practice of knowledge and skills spiraled throughout the year to support mastery and retention.	M

Meets | Score 2/2

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

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

Evidence includes, but is not limited to:

Materials are accompanied by a TEKS aligned scope and sequence outlining the order in which knowledge and skills are taught and built into the course materials.

- The *Teacher Textbook - Grade 3 Science* contains a Scope and Sequence outlining the TEKS aligned with each unit. This resource outlines the unit, TEKS, textbook reference page, and the number of class periods and revisions needed for each unit. The materials also include TEKS-aligned vertical alignment for grades 4 and 5 at the beginning of every chapter in the *Teacher Textbook.*
- The TEKS 1–5 Content Guide outlines which SEPs are aligned to lesson components.
- The materials 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.

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

- The materials provide year-long tools that indicate where teachers may find opportunities for facilitating student-made connections across core concepts, scientific and engineering practices, and recurring themes and concepts. For example, the materials provide a grade-level scope and sequence document outlining the instances where core concepts, SEPs, and RTS are present throughout program components. Additionally, the *Learn by Doing STEAM Activity Reader Book - Grade 3 Teacher Edition* contains an Appendix and Essential Content Guide, both outlining chapter contents and connections to science TEKS. The Appendix shows the science concepts

covered in each chapter, and the Essential Content Guide shows which chapters align with a given science TEKS.

- The investigation component in each lesson plan in the *Teacher Textbook - Grade 3 Science* allows students to make connections to scientific and engineering practices. For example, teacher guidance for facilitating student discussion in the Investigation: Mix It portion of the Mixtures lesson plan states: "Have students think: what would be the advantage and/or disadvantage if a bridge for pedestrians was made using wire?"
- Additionally, the Science is a Verb category in the *Teacher Textbook - Grade 3 Science* includes a Teacher Guided Questions to Inquiry section for each lesson. For example, materials provide ten questions for the lesson What are the Characteristics of the 3 States of Water? Some questions include: "How are gases different from liquids? How are liquids similar to solids? Other than water, what substance could we use to show change of state?" These questions provide some opportunities for facilitating student-made connections within a lesson but lack clear teacher guidance. For each set of questions there is guidance in the Additional Hints section.
- Teacher guidance in the *Learn by Doing STEAM Activity Reader Book - Grade 3 Teacher Edition* supports facilitating student-made connections across scientific and engineering practices and recurring themes and concepts. For example, teacher guidance under the Scientific Method header for the first chapter states, "Discuss key points such as: What patterns were observed? What differences were observed in the results between students' experiments? What problems were encountered, and how were they overcome? How they would have run the experiment differently, and why? What additional questions did the experiment raise?
- Further guidance under the heading "Systems" helps facilitate student-made connections to cause and effect: "Systems also provide an opportunity to review cause and effect, for example, with a car which is a sum of its parts. If one of its parts is defective, then this will impact the car's functioning." However, beyond the "Systems" header in the *Learn by Doing STEAM Activity Reader Book - Grade 3 Teacher Edition,* the materials lack clear teacher guidance for facilitating student-made connections across all recurring themes and concepts.

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

- The Pacing Calendar/Year Planner specifies dates for "revision, assessment, and reteach" after each unit. The Horizontal alignment chart shows teachers how knowledge and skills spiral throughout the year. Teachers can also view spiraling from other grades using the vertical alignment chart.
- Materials also provide spiraled practice using the Assessment generator and Interactive software tools. This tool provides, by TEKS, by skill level questions. There is also an interactive software tool loaded with web-based auto graded questions and teachers can add their own content into this tool.
- Materials provide suggestions for knowledge and skills spiraled through different activities. For example, the *Teacher Textbook - Grade 3 Science* 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. 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.
- Materials provide some review and practice opportunities in the *Learn By Doing STEAM Activity Reader Book – Grade 3 Student Edition* to support mastery and retention.

TPS STEAM into Science Grade 3

- Materials include project-based lessons incorporating multiple standards within an investigation, including some previously taught.

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 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 include a grade-level scope and sequence at the beginning of the *Teacher Textbook - Grade 3 Science.* This resource shows the science TEKS correlated with each unit in the textbook and the corresponding page numbers to reference the TEKS in other program components, such as the *Learn by Doing Reader Book*.
- Materials provide standards correlations that explain the standards within the context of the grade level through scaffolding information in the *Teacher Textbook - Grade 3 Science.* At the beginning of each traditional textbook lesson, materials showcase what students should already know from previous grades and will learn in future grades, K-5, below the objective students will learn through the lesson, with TEKS correlations.
- The Appendix of the *Learn By Doing STEAM Activity Reader Book - Grade 3 Teacher Edition* lists chapters within the program and correlating standards, including science and cross-content standards for Math and ELA. This chart includes the language of the standards for student skills but does not include the TEKS. The Essential Content Guide embedded after the Appendix in the *Learn by Doing STEAM Activity Reader Book - Grade 3* includes science standards correlations by chapter. Materials also include the vertical and horizontal alignment of the *Learn by Doing STEAM Activity Reader Book* in the *Teacher Program Guide - Grades K-8 Science*.

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.
- 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.
- Materials provide a STEAM into Science Grade 3 Textbook Kitting List, which alphabetically lists all required materials to complete activities and investigations.

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 use of technology. The materials outline activities with preparation and activity considerations. A section titled "Activity" refers teachers to local school safety procedures, such as 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 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 supports teachers as they schedule upcoming instruction.
- The Lesson Plan provides time stamp recommendations for the introduction, textbook work, investigation, and summary. The *Teacher Textbook - Grade 3 Science* 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 - Grade 3 Teacher Edition* includes the overall time required for a lesson on the use of science tools during investigations as needing 100 minutes or 2 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 implementing 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 - Grade 3 Science* provides a suggested sequence of units that follows the reporting categories outlined in the knowledge and skills (TEKS) for grade 3 science. For example, the lesson introducing mixtures in the *Teacher Textbook - Grade 3 Science* 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.
- The materials include a section called Activities and Pacing that describes the components of each chapter. It recommends teachers return to activities later if students do not have the skill sets for mastery. The Appendix in the *Learn By Doing STEAM Activity Reader Book - Grade 3 Teacher Edition* 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 - Grade 3 Science*, followed by a series of lessons on Science Safety, then lessons on Scientific and Engineering Practices (SEPs), and, finally, lessons on Matter and Energy. The Pacing Calendar in the materials from the *Teacher Textbook - Grade 3 Science* 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 - Grade 3 Teacher Edition* 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 *STEAM Activity Guide - Grade 3 Student Edition* 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 in the *Teacher Textbook - Grade 3 Science* 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 eight 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 student learning. While some student-facing program components in the materials include an appropriate amount of white space and a design that supports student learning, the core components do not.
    - For example, the *Student Textbook - Grade 3 Science* is text-heavy, lacking adequate white space and other design features to support student learning. Lessons in the textbook often contain one to two pages of closely spaced text without graphic or text features. Chapters and lessons within the textbook lack clear titles that would help students navigate the various topics, activities, and sections.
    - For example, the traditional lesson, Name the Scientist, in the *Student Textbook - Grade 3 Science* begins with two single-spaced pages of background information under the heading The Science. The lesson also includes an investigation with a list of seven ways to represent data, followed by an image and description. The paragraph and list text blend together without formatting or white space to grab students' attention and support understanding.
    - For example, in the *Learn By Doing STEAM Activity Reader Book - Grade 3 Student Edition*, some text in the story “Sharks Teeth!” appears in a larger, bolded, and different font. Some but not all of the differently formatted text represents dialogue, so students must figure out why certain information is bolded. Such a lack of consistency in design distracts the reader from pulling information from the text.
    - For example, each chapter in the *Learn By Doing STEAM Activity Reader Book - Grade 3 Student Edition* has bolded keywords that stand out so that students know the term is

important. Activities have space for students to write their responses to questions and graph their responses if needed.
- For example, the Student Journal provides students with white space to respond to fill-in-the-blank questions and space to create projects based on the questions.

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

- The materials do not embed age-appropriate pictures and graphics that support student learning and engagement without being visually distracting. Materials frequently use unrealistic clipart, rather than realistic pictures and graphics, when presenting science content and concepts and embed fun and decorative pictures and graphics that are visually distracting to students. Materials also embed pictures and graphics that detract from learning by presenting distorted images or models of scientific content.
  - For example, in Chapter 8, National Park Field Trip - Tadpoles and Frogs, of the *Learn by Doing STEAM Activity Reader Book - Grade 3 Student Edition,* the materials present a cartoonish picture of a scientist searching in a wooded area next to a clipart graphic of a tree dropping its leaves.
  - For example, in the *Student Textbook - Grade 3 Science*, most photographs and clipart lack captions explaining the images and how they relate to the text, thereby lacking support for student learning and engagement.
  - For example, a Project Based Lesson in the *Student Textbook - Grade 3 Science* includes a clipart image of an alien driving a car. The text on the page, titled The Science, explains the concept of energy transfer.
  - For example, in the *Student Textbook - Grade 3 Science,* materials include a clipart image of the Sun, Earth, and Moon System that depicts the Earth as inaccurately close to the Sun and shows the distance between the Earth and the Moon as being equal to the distance between the Earth and the Sun.

Materials include digital components that are free of technical errors.

- The materials include digital components that are free of technical errors.
  - For example, the *STEAM Activity Guide - Grade 3 Teacher Edition* includes activities 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.
  - For example, in the *STEAM Activity Guide* Chapter 1, teacher digital materials are free of spelling, grammar, and punctuation errors.
  - For example, In the *Teacher Textbook - Grade 3*, Life Cycle, teacher digital materials are free of inaccurate content or information.

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

Not Scored

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

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

Evidence includes but is not limited to:

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

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

TPS STEAM into Science Grade 3

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

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

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

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

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

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

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.	Yes

Not Scored

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

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

Evidence includes but is not limited to:

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

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

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

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

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

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

- Materials are available to parents and caregivers to support student engagement in online components.
    - For example, the *Family/Caregiver Guide - Grades K-8 Science* that teachers and caregivers should communicate so that digital access to the curriculum is provided for the student at home. Materials provide caregivers with access to online resources, including but not limited to homework, TEKS and ELPS correlations, glossary cards, and digital textbooks. This document allows parents and caregivers to support student engagement with online tools like the Intervention Focus Tutorial.
    - For example, materials provide an e-letter that provides online access to materials, resources, and activities to reinforce student learning and development.
    - For example, materials provide access to NEST family videos to support learning at home but lack guidance to support student engagement with this online component.
    - For example, materials provide parents and caregivers access to digital versions of all Reader Activity Books.