TPS STEAM into Science Grade 7

TPS STEAM into Science Grade 7 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 6	100%	100%	100%	100%
Grade 7	100%	100%	100%	100%
Grade 8	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.

TPS STEAM into Science Grade 7

Indicator 2.1

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

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

Partial Meets | Score 2/4

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

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

Evidence includes, but is not limited to:

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

- The *Learn By Doing STEAM Activity Reader Book* provides lessons with recurring themes, such as a background story and vocabulary that build upon past units. The scientific and engineering practices are hands-on activities that require the use of scientific equipment and materials. Opportunities for cross-curricular content are intertwined within the investigation.
- In the *Teacher Edition* of the *STEAM Activity Guide*, instructors guide students through TEKS-aligned activities and phenomena. This guidance gives students multiple opportunities to explore, expand, apply, and analyze scientific ideas, theories, and practices. For example, in the What's in The Bag? activity students explore how new substances can be formed with different properties as a result of a chemical reaction.

- Each chapter begins with an anchoring phenomenon and then provides students with different types of activities such as class discussions, research, vocabulary, reading comprehension, math, and experiments.

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

- The lesson plan section of the *Teacher Textbook* provides students with multiple opportunities to develop, practice, and demonstrate mastery of grade-level TEKS through activities, guided discussions, and investigations. The connection between overarching concepts and recurring themes is not explicitly stated on a consistent basis. Materials provide some opportunities to make connections between and within overarching concepts using the recurring themes. Recurring themes and concepts are not stated, leaving the terms open to interpretation instead of explicitly explained, defined, and presented.
- Newly introduced TEKS list overarching concepts and recurring themes. The lessons provide students with opportunities to use models, patterns, and systems to identify the connection between themes and concepts. Concepts and themes are not stated, leaving the terms open to interpretation instead of explicitly explained, defined, and presented.
- The *Teacher Textbook - Grade 7* introduces to instructors what the overarching concepts and recurring themes are for that specific unit. However, there are rarely opportunities for students to make connections between concepts such as systems in force and motion and systems in life science.
- The materials provide some connections between and within overarching concepts through the narrative texts in the *Learn By Doing STEAM Activity Reader Book - Grade 7 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.

- In the *STEAM Activity Guide - Teacher Edition*, thematic units and learning cycles strategically and systematically outline the order in which students develop key content knowledge and skills that are grade-level appropriate.
- In the *Teacher Textbook,* the Beginning of Strand chart guides the instructor through TEKS-aligned student learning objectives. There are additional supports for individual student learning.
- The *Teacher Textbook* reintroduces Earth and space to students. Students develop and use models that build upon K-5 experiences and progression. The activities in the unit use multimedia and visual displays to enforce key points.
- The appendix of the *Learn By Doing STEAM Activity Reader Book - Grade 7* features an essential content guide. The appendix highlights how each chapter is correlated with the TEKS. This appendix includes ELAR content that is covered in the chapters through reading and vocabulary activities.

TPS STEAM into Science Grade 7

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

- In the *STEAM Activity Guide - Teacher Edition*, in the Preface section under Problem-Solving, there is an overview that explains how students are taught to problem-solve through the Define, Asses, Plan, Implement, and Communicate “DAPIC” approach (DAPIC). Instructors are also provided with a chart that outlines student and instructor responsibilities throughout the learning cycle.
- Students are asked to plan an investigation where they have to keep the ice cube cold with given materials. Students are also asked to create an incline plane system using the engineering and design process (Teacher Textbook Pg 453). Students play a What Am I Game where they ask the teacher questions to identify the mystery substance using pre-taught vocabulary (Teacher Textbook page 310, G6). The student's role is to collect and interpret data, apply the concept, and expand on the concept through reading and global situations.
- The *Teacher Textbook* provides students with the opportunity to participate in virtual field trips. For instance, materials include a digital field trip series that uses virtual reality with activities to explore different ecosystems.
- The *Learn by Doing STEAM Activity Reader Book - Grade 7* explicitly details how to teach the scientific method and the engineering design process to students. The text recommends that instructors make a poster of the design process and provides the instructors with questions to ask students throughout the process. In Activity 5, students explore convection in a liquid. They plan the investigation and are guided to connect what happens in the classroom versus what happens in the oceans.

TPS STEAM into Science Grade 7

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

Partially Meets | Score 2/4

The materials meet some of the criteria for this indicator. Materials sometimes 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 7 Teacher Edition*, the materials provide narrative texts that provide access to phenomena that provide a springboard for learning. However, in the *Teacher Textbook - Grade 7 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 7 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 6 of the *Learn By Doing STEAM Activity Reader Book - Grade 7 Teacher Edition*, students are presented with a design engineering challenge to "design and create an insulator for a cup to keep the liquid contents cold." There is no authentic problem the students are solving or any relevant context for this activity; the materials simply tell the students to complete the task. The students complete the task because the materials direct them to do so.

- The materials address scientific practices to a greater extent than the practices of engineering. The engineering design problems, when present, are limited to the disciplines of physical science and rarely appear in the areas of earth or life science.
- 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 examine the parts of a system and their interdependence such as atoms and molecules, but there are no opportunities to make a connection to other disciplines such as life or earth science in order for students to make connections between systems across lessons.

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

- In the *Teacher Textbook - Grade 7 Science* instructors are provided an overview of how to access students' prior knowledge and leverage the learning. The lesson plan that discusses SI units has instructors lead students through scaffolded questions to gauge their prior knowledge.
- There is a section on phenomena and scaffolding information from the previous year's TEKS located in the lesson plan. It highlights what standards are built upon and what students should already know.
- In the *Learn by Doing STEAM Activity Reader Book - Grade 7 Teacher Edition*, instructors learn that mastery of student activities is dependent on a certain level of student comprehension and knowledge. In order to achieve high levels of student mastery, students must apply scientific principles to problems. Instructors are provided different ways to scaffold student learning based on prior knowledge.
- Students are continuously asked to use the scientific method to solve phenomena and engineering problems. The materials are scaffolded so the previous units' lessons, themes, and concepts are used again in a different way.

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 in some program components. Lesson plans are clearly outlined with activities and investigations that are aligned with the TEKS. The lesson plan also contains objectives, vocabulary words, and a lesson overview to better support student learning.
- In the *Learn By Doing STEAM Activity Reader - Grade 7 Teacher Edition*, the instructor is provided an outline that shows how and when the scientific method is applied throughout the unit. It is recommended that instructors review the process on a consistent basis. The reader outlines the scientific method in full detail. Instructors use the outlined methods to model agricultural runoff for students.
- Teachers are provided with clear student learning objectives that are aligned with the TEKS and the anchoring phenomenon. Instructors and students are provided with a scientific method flowchart to aid in learning how to solve the problem in each activity.

TPS STEAM into Science Grade 7

Indicator 3.1

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

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

Meets | Score 6/6

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

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

Evidence includes but is not limited to:

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

- Materials are aligned and provide connections to prior knowledge. Materials offer a K-8 program and provide a grade-level vertical alignment document demonstrating how students build and connect knowledge across grade levels. The document titled Horizontal and Vertical Alignment Information states, “As students progress within each grade, the STEAM storybooks are the first level in a series of TPS curricular materials, horizontally aligned to allow the students to engage in a curriculum that builds on knowledge and skills aligned with the Texas Essential Knowledge and Skills.”
- The *Teacher Program Guide - Grades K-8 Science* describes the vertical and horizontal alignment of the program. It references the use of storybooks “to provide an introduction to in a personally relevant manner.” In the Support for Teachers section, it includes a diagram on vertical alignment. It states that “in order for students to show mastery of the content, it begins with establishing a foundation in Kindergarten. As students progress through each grade, the content is reintroduced and expanded, skills are practiced as the levels and complexity are increased.”
- In the *Teacher Textbook - Grade 7 Science*, students study and complete descriptive, comparative, and experimental investigations through scaffolding of knowledge and skills in the lesson.

- Chapter 2 in the *Learn By Doing STEAM Activity Reader Book - Grade 7 Student Edition* uses the Lemonade Stand story that connects with the periodic table and its components. The Biodiversity In Our World chapter revisits this story and connects how elements and atoms relate.

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 7 Teacher Edition* and then move to the exploration in the *Teacher Textbook - Grade 7 Science*. The *Learn By Doing STEAM Activity Reader Book - Grade 7 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 7 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.
- In the *Teacher Textbook - Grade 7 Science*, each lesson provides instructors with scaffolding information for prior, current, and future grade-level TEKS. For example, the textbook provides scaffolding on Matter and Energy. It details how students expand their knowledge of the content at each grade level. During grade 4, students are expected to classify matter using physical properties and physical states. In grade 6, students build upon this by comparing and contrasting the states of matter using the structure, shape, volume, and kinetic energy of atoms and molecules. At the current grade level, they expand this knowledge even more by comparing and contrasting elements and compounds in terms of atoms, molecules, chemical symbols, and chemical formulas.
- Each chapter of the *Learn By Doing STEAM Activity Reader Book - Grade 7 Teacher Edition* is designed in a way that allows the students to develop knowledge gradually. Activity 1 focuses on reading comprehension, which gives students the opportunity to learn new content. Activity 3 provides students with the density formula and three mysterious substances' densities. They are expected to use the formula and identify the mysterious substance using the given density. Activity 4 increases the rigor by having students calculate the density using the displacement method.
- The Essential Content Guide shows the chapters and the TEKS involved in each chapter. Additionally, the pacing guide in the Online Library provides instructors with a daily calendar throughout the unit. The calendar shows an intentional sequence of TEKS to allow for a deeper conceptual understanding of each unit.

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

- Materials clearly and accurately present grade-level-specific core concepts, recurring themes, and science and engineering practices. In the *Teacher Textbook - Grade 7 Science*, students dive deeper into energy, with the Law Of Conservation of Energy being the recurring theme through past and future grades. The lesson plan describes the concepts students will focus on. As the lesson progresses, the instructor builds upon the concept and recurring themes.

- Materials clearly and accurately present science and engineering concepts. Students are asked to do scientific investigations using the scientific method in each chapter. For example, the *Learn By Doing STEAM Activity Reader Book - Grade 7 Student Edition* conveys accurate Information when it comes to the signs of a chemical reaction (production of a gas, smell, precipitate, color change, and change in temperature). This information aids students in Activity 8, where the student learning objective is to "investigate two reactions using the scientific method and determine if there is a physical or chemical change."

Mastery requirements of the 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 define student learning boundaries through learning objectives. The mastery requirements are within the boundaries of the main concepts of the grade level. Each chapter ends with true or false questions, a math link connection, and a literacy connection. One learning objective is that students apply Newton's Laws of Motion to "understand what happens to a person inside a car when it crashes into another object." The learning objective matches what students are expected to do during the activities at the end of the lesson.
- Materials provide inclusive content. The provision of a minority of content that is outside the boundaries of expected grade level serves a purpose for students of higher than expected ability. It is important to note that the content that is above grade level, is in addition to, not instead of content that is at grade level. For example, the grade level content in the *Learn By Doing STEAM Activity Reader Books* Chapter 2 is grade aligned to grade 7 in that it directly correlates to TEKS 6 A through E and includes: (A) compare and contrast elements and compounds in terms of atoms and molecules, chemical symbols, and chemical formulas; (B) use the periodic table to identify the atoms and the number of each kind within a chemical formula. For students who are advanced learners, that may be curious about why the elements are arranged in the periodic table. Their arrangement is based upon their subatomic particles (namely protons), and so this is covered briefly in Chapter 2. This is an example of where the materials provide grade-aligned materials and materials for below and advanced learners, the latter materials providing extra learning opportunities for advanced learners.
- Materials include concepts that are appropriately outside the boundaries of the grade level. In *Teacher Textbook - Grade 7 Science,* Lesson 7A, B, C - SIAV, the materials in How Fast Does a Car Move? refer to, explain, and include charts involving the terms scalar and vector in two sections within the lesson. This vocabulary is not included in the TEKS for grade 7 but this lesson does not require students to understand the scientific principles to a level that is above grade level..
- Materials include mastery requirements that include scientific vocabulary that is within the boundaries of the main concepts of the grade level. For example, Chapter is aligned with TEKS 11 A & B where the student is expected to: (A) analyze the beneficial and harmful influences of human activity on groundwater and surface water in a watershed. (B) describe human dependence and influence on ocean systems and explain how human activities impact these systems. Eutrophication is described and human activity is implicated with this phenomena. Eutrophication is considered a leading cause of the death of aquatic life forms and contamination of water worldwide and has impacted many coastlines including the Gulf of Mexico Dead Zone. Due to its importance and its direct link to the TEKS and the Texas coastline, using this term was critical to the interpretation of the TEKS.
- Materials include mastery requirements for concepts that are within the boundaries of the grade level. In the *Teacher Textbook - Grade 7 Science*, Lesson 6 - SIAV - Synthetic Materials, the

textbook spends a significant amount of instructional time on synthetic materials and assesses students on their understanding of synthetic materials. This is within the expectation of the TEKS. This term appears again in the next lesson, Physical and Chemical Changes, and is listed in the Key Words table provided for students and teacher and in the focus questions for students.

TPS STEAM into Science Grade 7

Indicator 3.2

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

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

Partial Meets | Score 3/6

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

Materials provide some support to teachers in understanding the 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 materials provide some support for teachers in understanding horizontal and vertical alignment. The STEAM into Science - Grade 7 TEKS Correlations document is provided, which outlines where the TEKS appear in the materials; however, this does not provide the teacher with support in understanding horizontal or vertical alignment with how learning progresses during the school year or among school years. The materials provide content examples that are often not in alignment with the vertical alignment of the TEKS, which provides teachers with an incorrect understanding of how grade-level content develops across the grade levels.
- 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 in the *Teacher Textbook - Grade 7 Science* 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 materials indicate that scientific and engineering practices are present in the materials as indicated in the STEAM into Science - Grade 7 TEKS Correlations document as well as in the *Teacher Program Guide - Grades K-8 Scienc*e where all the science TEKS for grades K-8 are listed. These documents do not support teachers in developing a deeper understanding of the vertical alignment among grade levels.
- The materials provide little teacher support for understanding the horizontal and vertical alignment of the recurring themes and concepts across disciplines, as the TEKS require. For example, there are opportunities for students to examine the parts of a system and their interdependence, such as atoms and molecules, but there are no opportunities to make a connection to how the interdependence within atoms relates to the relationship of the components of Earth that allow life to exist. The T*eacher 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 for teachers on grade-level misconceptions to support teachers’ subject knowledge. The *Teacher Textbook - Grade 7 Science* has a section titled Common Misconceptions. It lists that student misconceptions include: molecules and compounds being referred to as the same things, all mixtures are compounds, and all mixtures are heterogeneous. These sections are useful to teachers, support their subject knowledge, and allow them to anticipate barriers to student conceptual understanding. Each unit follows the same lesson flow, which allows instructors to catch and address misconceptions. For instance, instructors are provided key vocabulary words (physical change, chemical change, products, reactants, precipitate). This section is followed by background information (the signs of a physical and chemical change), then the misconceptions (physical changes are reversible, chemical changes are not irreversible).
- In the *Learn By Doing STEAM Activity Reader Book- Grade 7 Teacher Edition*, the instructor is prompted to have students restate the instructions to check for understanding. This technique supports the teacher in recognizing the student's barriers to conceptual development. This prompt is stated at the beginning of the page, which is a consistent trend throughout each activity.
- The materials provide explanations and examples of science concepts to support the teacher’s subject knowledge. For example, the *Teacher Textbook - Grade 7 Science* provides a section titled The Science prior to traditional (TRAD) lessons and a Background and Preconceptions section in the Science Is A Verb (SIAV) lessons. These provide a thorough yet concise explanation of the science contained in the lesson and corresponding activities.

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

- Materials provide a purpose or rationale for the instructional design. The *Teacher Program Guide - Grades K-8 Science* in the Support Notes for Teachers states that the content scaffolds as the characters go alongside the diverse students. The *Teacher Program Guide - Grades K-8 Science*, under the Support Notes for Teachers section, gives information about the rationale of how the program was designed. For example, "The STEAM storybook was designed with two key

purposes: first to teach science through the prism of STEAM, science, technology, engineering, and math as an approach more relevant to the lives of students."

- Materials explain the intent of the instructional design of the program. The *Teacher Program Guide - Grades K-8 Science* describes the philosophy of science teaching and learning. They explain the publisher's philosophy that we learn best by doing and the importance of scientific understanding for all students. They also explain the science teacher's role in developing critical thinking, problem-solving, and an appreciation of the scientific process. The *Teacher Program Guide - Grades K-8 Science* describes the Teaching Pedagogy - Storytelling and STEAM. The guide references the research on structure strategies and more information on why teaching science through storytelling is important.
- Materials provide an explanation of the goals of the program. For example, in the *Teacher Program Guide - Grades K-8 Science*, the Philosophy of Science teacher and learning section states, “TPS believes that we learn best by doing. Science is more than memorizing facts. It is a way of organizing and understating the surrounding universe.” The section references active learning, STEAM, storytelling, and inquiry as the main strategies of the program to cover required TEKS. For example, the subsection on research-based strategies states, “Recent research about STEAM content and storytelling can be read at the end of this guide. It heavily impacted the design of our program, and the first component of the program uses storytelling as its main strategy.” The Program Introduction does not reference goals tied to content knowledge, recurring themes and concepts (RTCs), or science and engineering practices (SEPs).
- The How to Use the Program explains the intent and purpose of the instructional design of the program, stating that “students must be with lessons that provide full cognitive involvement.” Students learn best by doing.
- In the *STEAM Activity Guide - Grade 7 Teacher Edition*, the introduction has a learning cycle and an article about how STEM projects are designed to help students master content. The learning cycle consists of Exploring The Idea, Getting The Idea, Applying The Idea, and then Expanding The Idea.

TPS STEAM into Science Grade 7

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 7 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 7 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 System of Units lesson in the *Teacher Textbook - Grade 7 Science* has students learn how to collect quantitative and qualitative data. Students are asked to plan and create an investigation that uses the base

unit of measurement that their group was assigned. This activity allows students to use meaningful writing and think and act as scientists.

- The Off To The Races activity can be found In the *STEAM Activity Guide - Grade 7 Student Edition*. In this activity, students are challenged with building a car using the given materials. This activity allows students to act as scientists and engineers and use thinking skills to solve problems using the Engineering and Design Process (EDP).
- The *Teacher Textbook - Grade 7 Science* tasks students with identifying mysterious substances based on physical properties (color, hardness, conductivity, etc.). Procedure 1 has students read through how to identify a mysterious substance. Post-investigation, students are asked to write why they think investigating properties are important in their day-to-day life.
- Students are provided sufficient opportunities for meaningful sensemaking through reading. Students read an article called “Name That Tool” under The Science Section. After reading, they participate in a “What Have You Learned” activity, where they apply what they've learned from the reading. Afterward, students engage in a Literacy Challenge with a partner. Using their answers from the Math Challenge, they think and write about what makes the chosen options function so well and what they could do to improve it.
- 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.

- Some materials include multiple opportunities to engage with scientific text that is not appropriate for the grade level. For example, in the *Student Textbook - Grade 7 Science,* Lesson 6A, B, C, D - SIAV includes information on the subatomic structure of the atom including information about protons, neutrons, etc. This is also included in Chapter 2 of the *Learn By Doing STEAM Activity Reader Book - Grade 7 Student Edition*. This student expectation involving subatomic structure existed in the 2017 TEKS, but was removed from the new TEKS and now doesn’t appear in the standards until advanced courses such as Integrated Physics and Chemistry (6B) or Chemistry (6A, 6C).
- The materials include some scientific text that is not appropriate for the grade level. In *Student Textbook - Grade 7 Science,* Lesson 7A, B, C - SIAV, How Fast Does a Car Move?, the materials refer to, explain, and include charts involving the terms scalar and vector in two sections within the lesson. This vocabulary is not included in the TEKS for grade 7 and is not introduced in the TEKS until high school Physics in 5B.
- The materials sometimes include scientific text that is not grade-level appropriate. For example., in *Learn By Doing STEAM Activity Reader Book - Grade 7 Student Edition,* Chapter 1, Activity 5 - Vocabulary Words and Terms Used in this Chapter, the activity instructs students to “Review the following words and terms. The term eutrophication is listed in the table of words. This vocabulary is not within the grade-level expectations for grade 7 and isn’t used until high school

Biology and doesn't actually appear in the TEKS until the high school Aquatic Science TEKS in 12C.

- The materials include multiple opportunities to engage with scientific text that is not appropriate for the grade level. In the *Teacher Textbook - Grade 7 Science*, Lesson 6 - SIAV - Synthetic Materials, the textbook spends a significant amount of instructional time on synthetic materials and assess students on the understanding of synthetic materials. There is no expectation in the TEKS for students to understand synthetic materials or their impacts in society. This term appears again in the next lesson, Physical and Chemical Changes, and is listed in the Key Words table provided for students and teacher and in the focus questions for students.

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

- Materials provide multiple opportunities for students to engage in various written and graphic modes of communication to support students in developing and displaying an understanding of scientific concepts. In the *STEAM Activity Guide - Grade 7 Student Edition*, students are given the opportunity to write down numbers of measurements, write explanations of how the digestive system works, write statements to explain the process of finding the rate of an airplane, and write the reasons that animals were sorted in particular groups.
- Materials provide multiple opportunities for students to communicate thinking on scientific concepts in written and graphic modes. In the *STEAM Activity Guide - Grade 7 Teacher Edition*, Chapter 2: Show Me The Numbers, students use graphical representation to create a presentation for the PTA. In Chapter 11: Heating and Cooling, students create a time versus temperature graph to show a visual of the temperature changes based on the type of insulation used. The *Teacher Textbook - Grade 7 Science* has students review key energy vocabulary words. Students are provided with step-by-step directions for mapping the different types of energy with their definitions. Once students are done, they compare and contrast their map with others through a teacher-facilitated discussion.
- Materials provide multiple opportunities for students to engage in various modes of communication to display understanding. In the *STEAM Arts Project Guide K-12*, there are numerous hands-on projects for students that are TEKS aligned. For example, the activity "Head Binding" has students identify the main functions of the systems of human organisms and create a model of which system they want to research. In the end, students are guided through class/group discussions and answer assessment questions independently.
- The *Student Journal* is set up so each unit has sections on focus questions, investigation, what was learned where students illustrate or model the concept, math, and literacy challenge. For example, the unit on Science starts off with a food web/chain, then it goes into the investigation, where the students research what they have learned. The students then illustrate a food web and then create a short script to act out with characters who are part of an underwater food web.

TPS STEAM into Science Grade 7

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 the *STEAM Activity Guide - Grade 7 Student Edition*, students act as scientists and engineers to apply their knowledge of phenomena to make sense of concepts. In Chapter 8, students apply the knowledge that they learned about digestion to research a disease that can upset the stomach and can impact the digestion of food. They present this information to the class, highlighting how the disease impacts human health.
- In *Learn By Doing STEAM Activity Reader Book - Grade 7 Student Edition,* Chapter 7: Crime Solved!, students act like scientists by investigating chemical and physical changes. Students run two experiments using ice cubes, vinegar, and baking soda. Post-investigation, students fill out a table with their observations and evidence of that change.
- The *Teacher Textbook - Grade 7 Science* provides a project-based lesson. Students start by reading a text on how humans use the oceans. They identify how humans harm the ocean and create a glossary of keywords. Instructors have the choice of showing a video or letting students do the research on their own. Students are then asked to create a play where they are a superhero that lives in the ocean. It is a science-based play with the expectation that the audience walks away knowing why the oceans are important to humans and how they harm them. They use this play to make sense of how humans impact the oceans.

TPS STEAM into Science Grade 7

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

Materials prompt students to use evidence to support their hypotheses and claims. 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.
- The materials prompt students to use evidence about text evidence and reading comprehension questions but rarely to support their hypotheses and claims. In the *Learn By Doing STEAM Activity Reader Book - Grade 7 Student Edition,* Chapter 1, Activity 1, students respond to reading comprehension questions. The materials instruct students to use "text evidence to support the responses where possible." Then, later, in Chapter 6, Activity 5 has students explore convection in a liquid. They observe a liquid as it boils and the changes that occur when cold water is added. They write their hypothesis of what is expected to be seen when the graduated cylinder is heated slowly compared to an unheated graduated cylinder. Students record their results and then conclude if their data supports the hypothesis.
- The materials prompt students to use evidence to support their hypotheses and claims. For example, In Activity 4 in Chapter 1, Water Essential For Life! In the *Learn By Doing STEAM*

Activity Reader Book - Grade 7 Student Edition, students run a two-part experiment examining drip irrigation's potential benefit. Instructors review the experimental designs with the students before testing. Students record their results in a table and drawing. Students then discuss, analyze, and conclude if their data supports the hypothesis. Following this, in Chapter 2, Students make a hypothesis about the predicted outcome of dissolving sugar in water at different temperatures. For the conclusion, the materials prompt students to "write whether their hypothesis was correct or not, and why."

- The materials prompt students to use evidence to support their hypotheses. Activity 5 of the Chapter 8 lesson in the *Learn By Doing STEAM Activity Reader Book - Grade 7 Student Edition* has students design an investigation to test a hypothesis of their choice surrounding the germination of seeds. After engaging in the scientific method, students are asked to "evaluate your experimental design and identify any questions you would like to have answered following your experiments.
- The materials sometimes students to use evidence to support their hypotheses or claims. The materials consistently prompt students to use text evidence for Reading Comprehension questions in the *Learn By Doing STEAM Activity Reader Book - Grade 7 Student Edition.* For nearly all chapters, the instructions to students for Reading Comprehension questions state, " . . . answer the questions using text evidence to support the responses where possible." In Chapter 8 in the *STEAM Activity Guide - Grade 7 Teacher Edition* on the digestive system, the functions of the human body when it comes to digestion, and how the body gets nutrients from food, students make a hypothesis about how the human digestive system operates. Students write an explanation using diagrams to support their ideas.

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

- The STEAM Art Projects component in the *STEAM Activity Guide - Grade 7 Student Edition* has projects that list science vocabulary words that students should focus on while completing the project. The vocabulary is embedded within the steps of the project as opportunities to develop context. For example, in the House Construction and Design Project section, the focus vocabulary words consist of data, materials, analysis, trend, and prediction. While students are working through Activity 6, the instructor asks them what materials they are using to paint and compares the quantities of materials.
- The materials included embedded opportunities to develop and utilize scientific vocabulary. For example, in the Program Components section of the *Family and Caregiver Guide - Grades K-8 Science*, the *Learn By Doing STEAM Activity Reader Book - Grade 7 Student Edition* is referenced and states that students should review the vocabulary using vocabulary cards. The objective of the vocabulary activity is for students to understand the meaning of the words and recognize when the word is spoken.
- In *Learn By Doing STEAM Activity Reader Book - Grade 7 Student Edition*, there is evidence of embedded opportunities for students to develop and utilize vocabulary. For example, in Chapter 4, Lia Stealer contains vocabulary embedded in the passage, and students review the vocabulary words to understand the meaning.
- The *Student Journal - Grade 7 Science* has several units with opportunities for students to develop and utilize scientific vocabulary. For example, students are provided four squares, with each quadrant having a vocabulary word that students write the characteristics of each and draw a picture. Examples of those words are atom, molecule, element, and compound.

TPS STEAM into Science Grade 7

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 generally support discourse throughout and have limited integration of argumentation. For example, Chapter 1 of the *Learn By Doing STEAM Activity Reader Book - Grade 7 Student Edition* has students reflect on prior data and knowledge through a discussion. During the discussion, students can ask questions, share data, answer questions, and compare data. This process allows students to learn and construct concepts for themselves. While students engage in discourse, the support for argumentation is rarely formally integrated into the materials.
- In the *Learn By Doing STEAM Activity Reader Book - Grade 7 Student Edition*, the words discuss and discussion are stated 54 times. These instances include the headings of sections, the overview of the sections, and explanations for the overview, such as the scientific method and reading guidance. The Comprehension skills section gives the teacher guidance on facilitating discussion. Still, it does not include any evidence or guidance to show the teacher how to incorporate students proving their answers with evidence. In the *Student Textbook - Grade 7 Science*, students have some opportunities to engage in argumentation and debates. These opportunities are partially integrated throughout the materials concerning the amount of student activities and do not provide student support for engaging in the process of argumentation.
- Each chapter in the *Learn By Doing STEAM Activity Reader Book - Grade 7 Student Edition* has some activities that integrate discourse to support students' content knowledge development. For example, Chapter 3, Crime Solved, has students discuss if they would like to visit their mother's workplace, what type of workplace it is, and why they would like to visit. Activity 8 has students experiment with chemical and physical changes and discuss if each experiment was a physical or chemical reaction. The instructor then asks if the changes are reversible. While students engage in discussion, they do not engage in formal argumentation.
- In the *Student Journal - Grade 7 Science*, evidence shows that students can discuss concepts or results of experiments with their partners or as a class. For example, students discuss the effects of removing a species from a food chain and are then asked by the instructor to draw a diagram of what was discussed. In another activity, instructors explain to students how an iron gate is susceptible to change, and students create a table to present what is discussed about the iron gate. Students engage in discourse, but the process of argumentation is not fully integrated within the materials.

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

- The materials provide some opportunities for students to justify their explanations, but not the more rigorous task of constructing arguments based on evidence acquired from learning experiences. For Example, Chapter 2 in the *STEAM Activity Guide - Grade 7 Student Edition* has students discuss why labels on graphs are important and why using graphs is beneficial to display information.
- The materials provide some opportunities for students to write to justify their explanations for phenomena or solutions but not to construct arguments based on evidence. For example, in Chapter 4 of the *STEAM Activity Guide - Grade 7 Student Edition,* students devise a plan to accomplish a task. Students write a plan explaining the parts of their experiment. Materials

focus on communication through sketches and journaling ideas in this chapter. This does not rise to the level of developing an argument based on evidence.

- Some opportunities are provided to share conclusions or observations but not to construct arguments rooted in evidence. In the *Student Textbook - Grade 7 Science*, students study the states of matter in an investigation by testing the physical properties of mysterious substances. After completing all the steps in the procedure, the students discuss the differences in their table. While discussing differences in data is an important part of scientific practices, it does not constitute an opportunity to construct an argument based on evidence. Students are not prompted to justify their data if there are differences.

TPS STEAM into Science Grade 7

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 guidance on anticipating student responses. For example, in the *STEAM Activity Guide - Grade 7 Teacher Edition*, Lesson 7, in the Expanding the Idea section, the materials provide elaborate possible student responses to questions posed in the student edition.
- The materials provide teacher guidance on anticipating student responses. For example, in the *Teacher Textbook - Grade 7 Science*, Lesson 6E TRAD, there are three investigation procedures with questions for students to answer. The materials provide possible student responses in red, but only one possible response is listed. There is no other guidance for how teachers should anticipate other possible responses or additional questions to address and deepen student thinking.
- The materials provide teacher guidance for anticipating student responses or questioning to deepen student thinking. In the *Learn By Doing STEAM Activity Reader Book - Grade 7 Teacher Edition*, the front matter of the materials provides some teacher guidance.
- The materials provide some teacher responses to possible students' responses. The materials divide teacher guidance into correct student responses, incorrect student responses, and partially correct student responses. The *Teacher Program Guide - Grades K-8 Science* recommends that students responding correctly be provided with "Level 2 assessment

questions" from the "Online Library - Assessment tools" for the TEKS being taught and affirm comprehension. The guide recommends that students responding incorrectly be provided with "Level 1 assessment questions." The materials state, "A student responds incorrectly - use the Online Library - Assessment tools; choose Level 1 assessment questions for the TEKS being taught…. Determine if there is a misconception and resolve."

- The materials provide some questions to pose to students in the *STEAM Activity Guide - Grade 7 Teacher Edition*, Lesson 5, Applying the Idea; the materials provide the question, "Ask students what compatible environment was required by their organism," and then the materials state, "get to the idea that environments include temperature."

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

- The materials provide teacher guidance on how to support students' development and use of scientific vocabulary. For example, in the Support Notes for Teachers within the *Teacher Program Guide - Grades K-8 Science*, the materials state, " Many more straightforward activities requiring little supervision can also be assigned as homework, particularly the vocabulary at the end of the activities section" that are found in the *Learn By Doing STEAM Activity Reader Book - Grade 7 Teacher Edition*. The materials here explicitly state that vocabulary development is an area that requires little supervision
- The materials provide some teacher guidance for supporting vocabulary development. In the *STEAM Activity Guide - Grade 7 Teacher Edition*, the beginning of each STEAM Art Project outlines the vocabulary in a section titled Science Vocabulary to Focus On, which provides teachers a starting point.
- The materials provide some teacher guidance on how to scaffold and support students' development and use of scientific vocabulary in context. In the *Teacher Textbook - Grade 7 Science*, Investigating Newton's Laws of Motion, the vocabulary section tells the instructor to "have students use strategic learning techniques to acquire basic and grade-level vocabulary. Have students work collaboratively to use techniques such as concept mapping, drawing, sound it out, recognizing spelling patterns, and recognizing rhyme, to aid their reading and learning."
- The materials provide some teacher guidance on how to scaffold and support students' development and use of scientific vocabulary in context. Students either interpret the meaning in the context of the narrative text or learn it during the final activity of each chapter, titled Vocabulary Words and Terms.

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

- The materials provide teacher guidance on student discourse and supporting students in using evidence to construct written and verbal claims. In the *Teacher Program Guide - Grades K-8 Science*, the Define, Assess, Plan, Implement, and Communicate (DAPIC) process is explained. For the Communication section, the guidance states, "The results are analyzed, conclusions are reached, and the results are shared with others. This takes the form of written or oral reports…" In the *STEAM Activity Guide - Grade 7 Teacher Edition*, Lesson 4, Learning to Communicate, the majority of the time is spent on activities such as drawing straight lines, drawing a cube, drawing a curved surface, sketching in proportion, and using sketches to communicate.
- The materials provide teacher guidance on preparing for student discourse. In the *Learn By Doing STEAM Activity Reader Book - Grade 7 Teacher Edition*, the section titled Comprehension

Skills provides a bulleted list of activities for teachers to encourage students to "participate in student-led discussion by eliciting and considering suggestions from other group members, taking notes, and identifying points of agreement and disagreement." 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".

- The materials provide teacher guidance on preparing for student discourse. In the *Teacher Textbook - Grade 7 Science,* Lesson 10B - TRAD - Geosphere, Biosphere, Hydrosphere, students "create a coordinate plane to represent the model." The teacher guidance for preparing for student discourse includes that they (students) should critique each other's work and discuss and resolve any differences.
- 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.
- The 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.
- The materials provide guidance on using evidence to construct claims. In the *Teacher Textbook - Grade 7 Science*, in Lesson 10B - SIAV Guided Questions to Inquiry, question number four asks, "What clues did you use to assemble your puzzle?" The materials provide a possible student answer. Additional questions in the Student Exercise include "Do the locations of the fossils, tillite rock, and mountains on your supercontinent make sense?"

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

- The materials provide support and guidance for teachers in helping students find solutions. In the *Learn By Doing STEAM Activity Reader Book - Grade 7 Teacher Edition*, Chapter 6, Activity 6, students use the engineering design process to design an insulator for a cup to keep the liquid contents cold. The materials state for students to "work to develop a provisional design on paper. Then build the design and test it to see if (it) solves your problem. If the designed solution does not meet your design solution expectations, then redesign and test." The background provided is adequate for the students to find solutions to the problem.
- The materials provide teacher guidance to engage students' thinking in various modes of communication throughout the year. For example, the *Assessment Guide - Grade 7 Teacher*

Edition includes sample responses to “Focus Questions” for the lesson Solving Problems. Specific guidance is provided about communication in the *Teacher Textbook - 5th 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.

- The materials provide support and guidance for teachers in facilitating students finding solutions. In the *STEAM Activity Guide - Grade 7 Teacher Edition*, Lesson 8, the materials provide support and guide teachers in facilitating students in finding solutions and sharing thinking in most of the STEAM experiences. For example, when exploring buoyancy, the materials state, “allow students to try their balloons as often as possible during the period. Run the race during the second half of the class period and allow time for students to complete II and III after the completion of the race,

TPS STEAM into Science Grade 7

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

Evidence includes but is not limited to:

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

- Materials provide diagnostic, formative, and summative assessment tools. The *Teacher Program Guide - Grades K-8 Science* contains a section called Support Notes for Teachers. Within the Support Notes for Teachers segment are frequently asked questions with answers. Question 4 in this document asks, “Where are the TPS diagnostic, formative, and summative assessment tools?” The responses state that for the Diagnostic assessments, “The interactive software tool provides automated grading for multiple choice questions; Benchmark tests (Level 1, 2 and 3 Assessments) in Online Library - Blackline Master.”
- The *Teacher Program Guide - Grades K-8 Science* has a Progress Monitoring section that provides information on the four Benchmark tests included in the program. Materials direct teachers to use the Benchmark 1 test to assess prior knowledge and then use the Benchmark 2 test to assess mastery of taught TEKS. Benchmark 3 test can be administered as an end-of-term test, and Benchmark 4 is the end-of-year test. In this respect, Benchmark tests 1, 2, and 3 can be considered diagnostic and formative assessments, and Benchmark 4 can be considered a summative assessment. Materials provide formative and summative assessments in the Interactive Software Tool and Assessment Generator.
- The Assessment Tools K–8 in the *Online Library* provides instructors with an assessment generator to provide a formal assessment for the students. Teachers select the TEKS, Scientific,

and Engineering practice and have options to have multiple choice questions, open-ended questions, or both options.

- Materials provide a range of assessments in the *STEAM Activity Guide - Grade 7 Teacher Edition.* In Chapter 1, the assessment consists of objectives, a problem/task, and requirements for submission. The student assessment is graded based on a grading rubric.
- Materials provide a range of assessments in the *Learn By Doing STEAM Activity Reader Book - Grade 7 Teacher Edition.* In Chapter 3, students calculate the density of mystery materials with the provided volume and mass. Students identify which materials are copper, gold, or silver. Activity 5 has students determine physical or chemical changes with eight practice problems. These activities include a Discuss & Analysis of results section where students are involved in asking questions and identifying the problems.
- The Assessment Tools K–8 in the *Online Library* provides instructors with an assessment generator to provide a formal assessment for the students. Teachers select the TEKS, Scientific, and Engineering practice and have options to have multiple choice questions, open-ended questions, or both options.

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 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."
- Materials include the Assessment Generator as an online tool for teachers. The Assessment Generator is categorized by grade level, question type, learner level, and TEKS, enabling the teacher to evaluate all student expectations. The online Assessment Generator can create assessments for any grade-level standard. The Benchmark Test tool available to teachers assesses all student expectations and indicates the expectations assessed at the top of each page.
- Chapter 1 in the *STEAM Activity Guide - Grade 7 Teacher Edition* provides the instructor with objectives that align with the task that students must complete for the assessment. The objectives in the chapter consist of calculating averages and identifying patterns in tables. In the Problem/Task section, students will be assessed on the process and notes they used during the Applying the Ideas section. Students will compare their predictions and develop reasons for differences to the final outcome of the inclined plane experiment. Students will write a conclusion based on what they have learned from the experiment.
- The Blood River Project in the *STEAM Activity Guide - Grade 7 Student Edition* gives students the standards for the project and the lesson's purpose.
- The Interactive Assessment Tool - Online Test and Quizzes provides questions for each student expectation.

- The *Learn By Doing STEAM Activity Reader Book - Grade 7 Teacher Edition* has a section that provides instructors a way to assess students formally. Each question is aligned with the TEKS and assesses all student expectations.
- The Pacing Guide in the *Online Library - Teacher Support* section has a pacing plan with a day-to-day breakdown of each unit to be taught. After each unit, there is time for revision, assessment, and reteach of the concepts. This format allows instructors to assess all student expectations.
- 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."

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

- The Assessment Tool in the *Interactive Assessment Software Tool - Online Test and Quizzes* is aligned to the TEKs that the instructor wants to assess the student on. The instructor has the choice to integrate Scientific Concepts, Science of Engineering Practice, recurring themes, and concepts to assess.
- The *Online Library* has an interactive assessment software tool that integrates Scientific Concepts as well as Scientific and Engineering Practices. Instructors can use the online tests and quizzes to assess students on the different TEKS that are being covered up to 100 attempts.
- The Online Library - Teacher Support has a section that includes an assessment matrix for each unit and its TEKS. Instructors add their students' names to include notes and scores for the concept. Instructors can track students' understanding of the recurring themes and concepts.

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

- The materials include assessments that require students to apply knowledge and skills to novel contexts. Specifically, the assessments within the program's *Assessment Guides* are activities separate from the lessons in the other program materials. This structure allows for assessment within the topic of study but in a new context, such as during the study of push and pull with magnets. Then, the *Assessment Guide* provides a performance task skills assessment that requires students to apply knowledge and skills about magnets and push and pull in a performance task skills assessment, which includes a rubric for scoring and summative questions.
- Chapter 1 in the *STEAM Activity Guide - Grade 7 Teacher Edition* provides instructors with objectives that align with the problem/ task that the student must complete for the assessment. consist of students making inferences from the data collected and identifying patterns in data sets. The problem that the students are given is to pick the best incline based on their knowledge of inclined planes. Students are graded using a grading rubric with criteria aligned to the objectives of the tasks.

TPS STEAM into Science Grade 7

- The *Student Journal - Grade 7 Science* has a section in each unit where students test themselves on their knowledge and skills/vocabulary. For example, in the unit on systems, students test themselves on resistance to change, food chains, and different organisms.
- The Student Journal has a Math and Literacy Challenge where students connect the concepts that are being taught. They can be assessed through the use of knowledge and skills and make a connection with other subjects. For example, in the unit on systems, students explain what a system is. Students are assessed by creating a short script to act out an imaginary underwater food web. Students are to explain if the food web is stable or unstable.

TPS STEAM into Science Grade 7

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 resources for evaluating student responses in most program components. The Chapter 3 assessment in the *STEAM Activity Guide - Teacher Edition* provides the instructor notes on what to look for when grading and elaborates on how to grade the task that the students solve.
- In the Blackline Master K-8, benchmark tests are broken down by the TEKS level. Assessments range from Level One questions up to Level Three. Instructors have the opportunity to leverage different activities based on the assessment to respond to student data. The assessment provides the instructor with the correct answer for multiple-choice questions.
- The appendices in the *Learn By Doing STEAM Activity Reader Book* provide instructors with an essential content guide to evaluate students' responses by aligning the TEKS, concepts, and vocabulary in student responses.
- In the *Learn By Doing STEAM Activity Reader Book - Teacher Edition*, instructors are provided with guidance for questions that can be used in any way for each lesson at the end of the resource material. TEKS and answers can help guide student responses.
- The Teacher Textbook provides instructors with a support section. The Test Yourself section is used to evaluate student mastery. It includes multiple-choice questions, and the correct answer choice is checked for the teacher's knowledge. The What Have You Learned section includes a

four-square-quadrant, stating, “In each of the quadrants below, write down some characteristics of each one of the vocabulary words you recently learned. Add a picture to help you remember the meaning of the term.” The teacher’s guide includes the phrase “student answers will vary.” Throughout the materials, activities and worksheets include possible student answers.

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 7 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.
    - The Beginning Of Strand in the *Teacher Textbook - Grade 7 Science* provides general direction on how to proceed with responding to student data.
- 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 7 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 *Teacher Textbook - Grade 7 Science* uses Beginning of a Strand that directs instructors to determine students' initial understanding using the assessment database. Afterward, the materials direct the instructor to determine the best possible strategy to address student needs.
- The Teacher Support section of the Online Library has a video titled “How to use the [platform] Assessment Generator tool.” These exams are formative and can be utilized throughout the school year. Level One is for students showing a lower level of mastery, Level Two is for students on grade level, and Level Three is for students demonstrating mastery.

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 7 Science*, the *Student Journal - Grade 7 Science*, the *STEAM Activity Guide*, the *Assessment Guide - Grade 7 Student Edition*, and the Intervention Focus Tutorial.
- The *Assessment Guide - Grade 7 Teacher Edition* offers review activities, performance tasks, and reteach assessments to assist teachers with direct instruction for using interventions. Support Matrices provide teachers with guidance on resources to use when supporting students. The *Teacher Textbook - Grade 7 Science* offers general suggestions for supporting students but lacks specific guidance on responding to student data.
- 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.

TPS STEAM into Science Grade 7

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.	M
3	Materials provide guidance to ensure consistent and accurate administration of assessment tools.	PM
4	Materials include guidance to offer accommodations for assessment tools that allow students to demonstrate mastery of knowledge and skills aligned to learning goals.	PM

Partial Meets | Score 1/2

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 7 Teacher Edition.*
    - For example, in Chapter 11 of the *STEAM Activity Guide - Grade 7 Teacher Edition,* the assessment uses objects in the scenario that are familiar to all students, such as houses, windows, and heating and cooling a home.
    - Chapter four of the *Learn By Doing STEAM Activity Reader Book - Grade 7 Teacher Edition* contains items that are scientifically accurate, avoid bias, and are free from errors. For example, in Chapter 4, Lia-Stealer! is about the body systems. The images within the text include people of diverse backgrounds interacting together, and the questions all follow the scientific process of learning.
    - In the Assessment Generator, materials correctly state there is a difference between speed and velocity and ask students to differentiate between the two.

TPS STEAM into Science Grade 7

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

- Materials use some clear pictures and graphics that are developmentally appropriate. The assessment in Chapter 2 of the *STEAM Activity Guide - Grade 7 Teacher Edition* contains graphics such as the grading rubric but does not contain any pictures. The grading rubric graphic is developmentally appropriate for students to understand the criteria for the grading process. Test questions in the Assessment Generator provide students with developmentally appropriate images on 24 occasions (out of the 671 test questions) for grade 6. This indicates that only 3.5% of the questions have pictures or graphics. Grades 7 and 8 test questions are similar to grade 6.
- Assessment tools in the K-8 Online Library contain limited pictures/images. Questions in the *Learn By Doing STEAM Activity Reader Book - Grade 7 Teacher Edition* provide formative and informative assessment questions. The Test Yourself section does not include any graphics in the Teacher or Student Edition. The indicator uses the terms pictures and graphics in the plural form. Test questions in the Assessment Generator provide students with developmentally appropriate images on 24 occasions (out of the 671 test questions) for grade 6. This indicates that only 3.5% of the questions have pictures or graphics. Grades 7 and 8 test questions are similar to grade 6.

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

- Materials provide guidance to ensure consistent and accurate administration of the various assessment tools included in program components. The Progress Monitoring section of the *Teacher Program Guide - Grades K-8 Science* provides guidance on when to administer certain assessment tools. The product has four benchmark tests and guidance for when to give each benchmark. For example, “Benchmark 1 test - to assess natural knowledge at the commencement of term before any program content being taught.” Materials guide the teacher on when to administer benchmarks 2-4 throughout the year.
- Materials provide guidance for the administering items in the Assessment Database tool. The Assessment Database entry screen provides options for teachers to select TEKS-aligned questions, choose the level of questions, and show the answers.
- 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 Activity Reader Book*, materials state that “teachers will assess students using Level 1 and 2 questions from the Online Library - Assessment generator or Online Library - Interactive software tool ... .These results should be added to the assessment matrix.”
- The *Teacher Textbook - Grade 7 Science* provides minimal 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.”
- The Online Library contains guidance videos for using the Assessment Generator tool, including how to store information and reuse questions. The videos provide guidance on how to create assessments by TEKS, skill level, and how to personalize assessments.
- The Assessment Generator gives an overview of each assessment teachers create. Teachers can see sample student answers to help with scoring open-ended responses.

TPS STEAM into Science Grade 7

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. Teacher guidance presented as Tips for ELL Students and Tips for Response to Intervention (RtI) Support mentions help with reading student-facing text but does not include guidance to provide oral administration 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 but does not give guidance to offer accommodations on assessment tools included in the program.

TPS STEAM into Science Grade 7

Indicator 7.1

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

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

Meets | Score 2/2

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

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

Evidence includes but is not limited to:

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

- Materials give an overview of recommended targeted instruction and activities to scaffold learning for students who have not yet achieved grade-level mastery in the Support Notes for Teachers section of the *Teacher Program Guide - Grades K-8 Science.* Here, materials state: “TPS has provided supplements that can be used for after school, reteaching, or additional homework.” The document notes the inclusion of the Learn By Doing Activity Reader Book RTI Scope and Sequence, which provides an alternate pacing plan for each grade level. It also states that STEAM activities “act as reteach tools for students who did not master the content with the first two components,” instruction provided through the *Learn by Doing STEAM Activity Reader Book* and textbook lessons for the grade level.
- The Support Notes for Teachers also recommend using the Online Library - Assessment Tools with “students who remain below grade level” or a “student who responds incorrectly.” In these situations, teachers can “choose Level 1 assessment questions for the TEKS being taught…and discuss answer given with student. Determine if there is a misconception and resolve.” The guidance emphasizes the role of *science language* in causing student misconceptions and recommends that teachers use the science glossary cards provided in the Online Library to review word 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 in the Learning Strategies and Scaffolding sections of unit introductions in the *Teacher Textbook - Grade 7 Science*. This guidance is sometimes generalized for all students and not specific to students with learning gaps. For example, guidance included in Organisms and Environments states: "Remind students that the cell is the basic unit of life. Then ask them to explain how multicellular organisms can have so many varied structures with different functions. Prompt students to realize that the cells in multicellular organisms can be various specialized types and that these different types of cells allow for the wide variety of structures and functions. Then ask students to identify some common cell types in their body."
- Materials also include a Scaffolding section for each lesson in the *Teacher Textbook - Grade 7 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.
- Additionally, in chapter 2 of the *STEAM Activity Guide - Grade 7 Teacher Edition*, materials recommend teachers scaffold learning by asking open-ended questions, encouraging students to try various graph methods, probing student thinking, and guiding them to complete tasks. In the *Learn By Doing STEAM Activity Reader Book Student Edition*, each chapter reading contains sentences in bold that rephrase or provide extra examples or define the concepts. For example, in Chapter 2, "Lemonade Stand," rephrasing and extra text examples can be found.

Materials provide enrichment activities for all levels of learners.

- Materials provide enrichment activities embedded in the core component *Learn By Doing STEAM Activity Reader Book - Grade 7 Teacher Edition.* Chapter 3, Crime Solved, includes five enrichment activities. Activity 1 is an ELAR extension that requires students to read and answer questions. Activities 3 and 4 require students to apply math skills when solving for density. Activity 5 has students work on several experiments and record the data (observations) on a table.
- Materials include the STEAM: Real Science Middle School Teacher Edition in the Online Library of resources. This resource includes enrichment lessons that allow students to apply their knowledge and skills of each concept to real-world scenarios through the Engineering Design Process (EDP).

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 lessons within the *Teacher Textbook - Grade 7 Science.* Each teacher-led lesson contains suggested scaffolds under the Support header, giving the teacher suggestions for helping students reach mastery of lesson content. For example, in the Making Informed Decisions lesson, guidance under the Support header states: "Students may struggle with the meaning of terms cost-effective, credible and evidence. Use the key words and definitions and allow further time to discuss each term." Throughout the textbook, 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 regarding 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 7

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.

- The IMaST Learning Cycle Section in the *STEAM Activity Guide - Grade 7 Teacher Edition* provides an overview of Exploring the Idea, Getting the Idea, Applying the Idea, and Expanding the Idea sections. When students explore, the instructor acts as the facilitator. They allow students to test materials, manipulate objects, make observations, and collect data. During the Getting the Idea section, students discuss their findings and experiences during Exploring. The instructor addresses misconceptions in the learning and questions students.
- In the *STEAM Activity Guide - Grade 7 Teacher Edition*, each lesson provides the instructor with an introduction to the lesson and the lesson objectives. In Chapter 1, the introduction provides the instructor with a snippet of what students will be doing in each section of the learning cycle and how to facilitate student learning.
- The online *Teacher Textbook - Grade 7 Science* gives an overview of all the steps the instructor can take for a variety of developmentally appropriate instructional approaches to engage students in the mastery of the content. The suggested steps provided by the text are listed sequentially: *Learn By Doing STEAM Activity Reader Book - Grade 7 Student Edition* (which has a

variety of instructional approaches), the STEAM Guide for STEM and Art projects, and an assessment.

- The scope and sequence outlines each unit with the student learning objective and the key concept that is TEKS aligned. For example, Unit 3, Force, Motion, and Energy, states that the student describes the cause-and-effect relationship between force and motion, and the student understands the behavior of thermal energy as it flows into and out of systems. The aligned TEKS: 7ABCD are referenced again in other lessons such as Baseball Warmups through the Learn by Doing *STEAM Activity Reader Book - Grade 7 Student Edition*, How Fast Does a Marble Move? in the Learn by Doing *STEAM Activity Reader Book - Grade 7 Teacher Edition*, and What's Your Speed? through the Learn by Doing *STEAM Activity Reader Book - Grade 7 Teacher Edition.*
- In the *Learn By Doing STEAM Activity Reader Book - Grade 7 Teacher Edition*, each chapter provides a variety of instructional approaches to engage students in the mastery of the content. For example, Chapter 3, Crime Solved, has a reading section with vocabulary and key information needed for the hands-on activities. Activity 1 has students read the passage and answer questions. Activities 2 and 5 have students identify the examples as physical or chemical changes. Activity 3 gives students a mystery substance and has them identify it by solving for density. Activity 4 has students continue to practice solving for density. Activity 7 has students discuss as a whole class.

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

- Chapter 2 In the *STEAM Activity Guide - Grade 7 Teacher Edition* prompts instructors to have students work in groups of two or three. In Chapter 6, What's That Smell? students work in small groups with three or four other students.
- In the Online Teacher Support - *Family/Caregiver Guide - Grades K-8 Science*, under Teaching Pedagogy - Storytelling and STEAM, it states that the stories could be read in groups with the teacher or in the home with the caregiver.
- The *STEAM Activity Guide - Grade 7 Teacher Edition* tells instructors to direct students to work in large groups for access to more materials. The *STEAM Activity Guide - Grade 7 Teacher Edition* has instructors direct students to work in small groups for the experiment with the materials for Newton's Laws of Motion, Unit 2, Force and Motion. In the activity, Should I Stay or Should I Go, the teacher directs the students to work in groups of three or four for an activity on modeling roller coasters.
- The *Learn By Doing STEAM Activity Reader Book - Grade 7 Teacher Edition* provides activities that support flexible grouping. For example, Activity 1 in Chapter 6, Baseball Warmups, is an individual assignment where students read the passage and then answer questions. Activity 2 is a small group discussion on energy transformation. Activity 5 is a small group activity where students work on a convection lab. Activity 6 has students work one-on-one in a design challenge. Students create an insulator for a cup to keep a liquid cold, and then they need to run tests and answer questions about the design.
- The *Learn By Doing STEAM Activity Reader Book - Grade 7 Student Edition* has students read the chapter and answer reading comprehension questions independently or with a partner. Students then get into small groups in Activity 2 to research body systems. In Activity 4, there is a whole group discussion about how organ systems are dependent on others and what happens if there is a malfunction. Students can use the research to share different points.

TPS STEAM into Science Grade 7

Materials 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.
- Chapter 1 In the *STEAM Activity Guide - Grade 7 Teacher Edition* has students work collaboratively in the Exploring the Idea section to complete the focus questions. In the Exploring section, the teacher also guides learning by asking probing questions. In Chapter 1, Student Assessment, the students work independently and collaboratively to write a conclusion about their learning.
- Materials partially support modeling. The indicator refers to modeling as the instructor showing students what they should be doing and how. Publisher refers to making models of scientific phenomena compared to showing students how to solve a specific problem (such as calculating speed). The *Teacher Textbook* states that the instructor may choose to demonstrate malleability. Opportunities for teachers to model a skill are not explicitly stated consistently. Another part of the *STEAM Activity Guide - Grade 7 Teacher Edition* contains opportunities for collaboration, such as helping students decide on questions that can be answered using an experimental investigation.
- Instructors and students are provided context on how to practice modeling a concept when collaboration among students occurs and in independent practice, such as answering questions. For example, Chapter 2, Lemonade Stand, of *Learn By Doing STEAM Activity Reader Book - Grade 7 Student Edition* supports independent practice, guidance from the teacher, collaborative practice by students as they work in groups and teacher modeling.
- The STEAM Activity Guide - Grade 7 Teacher Edition, Unit 2, Matter and Energy, refers the instructor to use *Learn By Doing STEAM Activity Reader Book - Grade 7 Student Edition,* Chapter 2, Lemonade Stand, to support multiple types of practices. The chapter's activities are aligned to support independent practice, such as Activity 1, which is reading comprehension. Materials support guided practice, which tells instructors to wear safety gear and go over the safe practice of using a hot plate. Materials support collaborative practice by having students work in small groups on an experiment and discuss results. This chapter also supports teacher guidance as it requires the teacher to ask students to restate instructions to check for understanding.
- The *Teacher Textbook - Grade 7 Science* provides an investigation where students put the continents back together as the supercontinent Pangea. Students do this independently. This activity suggests that teachers should support and guide students as necessary but still allow a productive struggle. Students can collaborate and research Pangea and its facts, along with a diagram/model/graph, etc.

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

- In the *STEAM Activity Guide - Grade 7 Student Edition*, diversity is shown in the images in the textbook based on race, age, ability, and gender. The textbook includes images of men and women and people of different ethnic backgrounds.
- In the *STEAM Activity Guide - Grade 7 Student Edition*, the images represent a diversity of places, such as a river, a bike trail, a dialysis facility, and a cave.
- The *Teacher Textbook - Grade 7 Science* has directions on “incorporating diversity into your teachings.” It has Introduction, Race and Culture, Disabilities, Gender, and Advanced Learners sections.

- The materials demonstrate ample amounts of diversity. The *STEAM Activity Guide - Grade 7 Teacher Edition* has diversity on the book's cover, and each chapter shows images of a diverse learning community. The *STEAM Activity Guide - Grade 7 Student Edition* also shows diversity if looked at holistically rather than in individual sections.
- In *Learn By Doing STEAM Activity Reader Book - Grade 7 Teacher Edition*, images represent a diversity of communities, people, and places. For example, Chapter 3, Crime Solved, has an image representing children of diverse backgrounds working on an experiment to test solutions and observe the changes. Chapter 4, Lia-Stealer, has students of diverse backgrounds who play soccer in the hospital with an injured player who had an x-ray done. Chapter 5, Fantastic Voyage, is a school play conducted to demonstrate the energy transformation of blood cells and the movement of the blood through the body.
- In the Online Library, students are provided multiple pages of scientists—alive and no longer living—from different backgrounds and ethnicities. These images include facts about famous scientists and their achievements.

TPS STEAM into Science Grade 7

Indicator 7.3

Materials include listening, speaking, reading, and writing support 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 7 Science.* For example, in the Grade 7 lesson, Tools, the materials list the following suggestions under the ELL header: "Ensure students understand the adjectives you are using to describe tools. Have students think about the words they can use to describe the different tools. Encourage students to think about prior experiences they have had in which they have thought about and discussed tools." Other lessons in the *Teacher Textbook* offer similar suggestions for supporting emergent bilingual students. For example, the Grade 7 lesson, Cost-Benefit Analysis, directs teachers to "Use the classroom board and create a simple cost-benefit analysis. Step students through each element and explain the importance of this analysis. Allow further time for students to pose any questions and respond. Resolve any misconceptions." The Physical and Chemical Changes lesson lists two lesson adaptations under the ESL/Reinforcement heading: You may want to

demonstrate for students the setting up of one experiment. After they witnessed the procedure, they should be able to set up additional experiments. Encourage students to use their past knowledge and experience to understand meanings of new words." While these suggestions guide teachers toward providing linguistic accommodations, the guidance is not commensurate with various levels of English language proficiency as defined by the ELPS.

- Materials embed teacher guidance for incorporating literacy strategies in science instruction in the *Learn By Doing STEAM Activity Reader Book - Grade 7 Teacher Edition;* however, this program component lacks guidance for linguistic accommodations within teacher guidance for activities, science vocabulary, and narrative text. For example, materials present reading comprehension and vocabulary activities without guidance for linguistic accommodations commensurate with the English language proficiency levels defined in the ELPS.

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

- Throughout the program components, materials encourage use of students' first language and use it as a means to linguistic, affective, cognitive, and academic development in English. Materials primarily offer guidance on native language use through flashcards and translations, as well as some oral responses and discussions.
- Materials encourage the use of students' first language in suggestions under the ELL headers in the *Teacher Textbook - Grade 7 Science.* These suggestions pertain to using Spanish glossary cards included in the program components and making flashcards in languages other than English. For example, ELL header guidance in two lessons, Investigation: Name that Tool and Investigation: Name the Scientist, states: "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 encourage the use of students' first language in suggestions under the Tips for ELL Students header in the *STEAM Arts Project Guide K-12* Grade 7. 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 7

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 provide guidance on fostering connections between home and school.

Materials provide information to be shared with students and caregivers about the design of the program. 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 7 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 7 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 help 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.” It further suggests “Family Visits” to reinforce student learning and development. The list contains five suggestions: Texas Park, Texas Coast Wetlands, Texas Fishery, Texas Wildlife Reserve, and Gulf Coast Beach. The materials direct parents and caregivers to "ask your family member what studies they have completed that relate to these locations and discuss their thoughts and reviews."
- Materials also provide the NEST Family Videos to support caregivers with science content knowledge. Each workbook is provided with a Parent and Teacher guide that has activities and coloring pages that students can complete at home with their parents.
- The *Teacher Textbook - Grade 7 Science* lessons also include an At Home section with specific suggestions for home reinforcement.

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 7

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 in 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 some practice and review opportunities that support instruction.

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

Evidence includes but is not limited to:

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

- The *Teacher Textbook - Grade 7 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. A pacing calendar view is also available that shows the breakdown of units daily.
- An alternate RTI scope and sequence is provided and aligned with the STEAM Storybooks and other instructor-facing materials.

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 7 Teacher Edition* contains an Appendix and Essential Content Guide, both outlining chapter contents and connections to science TEKS. The Appendix shows the science concepts covered in each chapter, and the Essential Content Guide shows which chapters align with a given science TEKS.
- The Science is a Verb category in the *Teacher Textbook - Grade 7 Science* includes a Teacher Guided Questions to Inquiry section for each lesson. These questions provide opportunities for

facilitating student-made connections across core concepts. For example, materials provide five questions each for the lesson What Is the Structure of an Atom? These include: “What is the relationship between atoms and elements?” and “If you know how many protons are in an atom, how can you determine the identity of an atom?” 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 7 Teacher Edition* provides support for facilitating student-made connections across systems, one of the grade-level recurring themes and concepts in the TEKS. Under the header “Systems,” materials guide teachers as follows: “Introduce the concept of systems to the students before commencing reading the book. Explain that a system is a sum of its parts. Systems exist in our world on a microscopic scale, from atoms to each of our cells in our body to the macroscopic scale of our Earth and solar system. In each system the whole system is dependent on the complementary sum of its parts.” Materials then highlight examples relevant to chapter contents, as guidance for student discussion at the end of each chapter.

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.
- The TEKS 1-5 Content Guide shows some evidence of the materials spiraling knowledge and skills in various program components across the year. The evidence does indicate where specific science and engineering practices are revisited throughout the year which are relevant to the activities included for that concept.
- Materials show spiraling of cross-content connections. The materials provide intentional practice and spiraling of previously taught knowledge and skills from earlier lessons/grade levels and the current lesson’s science knowledge and skills. Materials state: “If students accurately answer either or both questions then once the textbook content that follows has been completed it is highly likely that the science content will have been mastered. Teachers assign level 2 questions for TEKS taught and record results onto the assessment matrix”. Materials then explain what to do if students have not yet mastered content.
- Materials provide review and practice opportunities in the *Learn By Doing STEAM Activity Reader Book – Grade 7 Student Edition* to support mastery and retention.
- Materials include project-based lessons incorporating multiple standards within an investigation, including some previously taught.

TPS STEAM into Science Grade 7

Indicator 8.2

Materials include classroom implementation support for teachers and administrators.

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

Meets | Score 2/2

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

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

Evidence includes but is not limited to:

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

- The *Teacher Textbook - Grade 7 Science* includes guidance and recommendations for phenomenon-based learning, embedded technology, background information, and lesson extensions to support and enhance student learning. Instructors can also access a support line via phone and email for additional support and questions regarding the materials.
- 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 guidance and recommendations in the *Teacher Program Guide – Grades K–8 Science*, with a program introduction, program components, TEKS, LEPS, and a navigation guide to online resources. Within the guide, materials provide an explanation of the different components and how they are used. This resource also includes teacher guidance for getting

started with the material with embedded technology. For example, materials explain the use of materials such as online libraries, *Teacher Textbook* lessons, *Student Textbook* activities, and assessment tools.

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 7 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 7 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 7 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 7* 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*.
- The *Learn by Doing STEAM Activity Reader Book - Grade 7 Teacher Edition* includes cross-content standards for ELA and math, such as comprehension of increasingly complex text, text-based discussions, and data analysis. Materials also include lessons and projects requiring research skills in the Online Library. These projects involve real-world scenarios correlating science learning with technology, engineering, art, and math skills.

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

- Materials include a comprehensive list of materials students need for activities and investigations in the *Teacher Textbook - Grade 7 Science*. Teachers can view a list of materials needed for specific lessons in the different investigations. The materials detail supplies for use in hands-on exploration in grade 7.
- The *STEAM Activity Guide Grade 7 Teacher Edition* lists materials needed for each lesson portion. This component begins with a phenomenon that requires students to use scientific equipment and supplies to connect prior knowledge with a new concept.
- The RTI Scope and Sequence includes a materials list for each activity considered hands-on or a lab experience.
- Materials provide information in the Online Library for refilling material kits.
- Materials provide a STEAM into Science Grade 7 Textbook Kitting List, which alphabetically lists all required materials to complete activities and investigations.

TPS STEAM into Science Grade 7

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

- In the *Teacher Textbook - Grade 7 Science*, the laboratory safety section outlines how to create safety assessment plans with students and states instructors should do this before each investigation. Each investigation section reminds teachers to ensure safety standards are being followed and notes that safety standards must be aligned with local standards and the TEA safety standards.
- The Scientific Method lesson in the *STEAM Activity Guide* includes safety tips for hands-on learning and general safety. Instructors are provided with checklists for general safety practices and usage of safety equipment.
- Materials include guidance for safety practices in the *Scientific, Investigation, and Reasoning Handbook – Grade 7*. The first lesson, "Working Safely and Responsibly," reviews how to behave safely in science lessons.

TPS STEAM into Science Grade 7

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 *Teacher Textbook* provides a detailed scope and sequence with time stamps for the entire unit. In addition, lesson plans list time stamps for the daily lesson. The average lesson time ranges from twenty to fifty minutes.
- Instructors have access to a pacing plan that extends throughout the year. In addition to this pacing plan, there is an RTI-based scope and sequence with time stamps throughout the activity.

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

- The *Teacher Textbook* includes an overview of content and skills to be introduced to students. Scientific concepts, scientific and engineering practices, and building background knowledge provide students with guided inquiries during investigations. These investigations include but are not limited to STEM projects and other assessment forms. In the *Teacher Textbook*, lesson plans are in place to implement the sequences of the content.
- The content guide for the grade level provides the chapter with corresponding TEKS. The chapters follow a developmental progression, building student content knowledge that follows the scope and sequence.
- The RTI scope and sequence provides specific details on the duration of the units, lesson, and content pacing, as well as sequential chapters. All materials are TEKS-aligned.
- Instructors have access to a flow chart that aids in accessing students' prior knowledge and best practices for the implementation to address gaps in student knowledge. Instructors are also provided with concise, student-friendly objectives and outlines of tasks that can be leveraged to fill in those gaps.

TPS STEAM into Science Grade 7

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

- The *Teacher Textbook* provides an instructional calendar that outlines the TEKS and skills addressed in each unit. The projected time to cover all instructional material is one hundred and fifty days.
- The pacing plan provides instructors with two weeks of flex days for assessments and reteach options. The RTI lesson plans allow flexibility for reteaching with the instructor choosing which activity aligns best with student needs.

TPS STEAM into Science Grade 7

Indicator 9.1

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

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

Not Scored

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

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

Evidence includes but is not limited to:

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

- Materials do not include an appropriate amount of white space and a design that supports and does not distract from student learning. While some student-facing program components in the materials include an appropriate amount of white space and a design that supports student learning, the core components do not.
    - For example, the *Student Textbook - Grade 7 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, Elements, Compounds, and Mixtures in the *Student Textbook - Grade 7 Science* begins with three single-spaced pages of background information under the heading The Science. The two graphics embedded in the text lack design features, such as labels, captions, and special formatting that would grab student attention and support learning. The lesson also includes an investigation with six steps to follow. The numbered steps are presented as paragraphs of text, not separated by spaces, and without formatting to help students follow them. Step 4 contains black-and-white images of molecules to help students draw models. Here, the font and images appear inconsistently sized to fit the page.
    - For example, each chapter in the *Learn By Doing STEAM Activity Reader Book - Grade 7 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 the *Student Textbook - Grade 7 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, in the *Student Textbook - Grade 7 Science,* materials include two clipart images of telescopes that do not realistically depict the instruments. The text on the page, titled The Science, explains how scientists use technology, including the Hubble telescope, to gather information from space.

Materials include digital components that are free of technical errors.

- The materials include digital components that are free of technical errors. Teacher digital materials are free of spelling, grammar, and punctuation errors.
  - For example, the *STEAM Activity Guide - Grade 7 Teacher Edition* and *Teacher Textbook - Grade 7 Science* includes activities free of inaccurate content materials or information. The materials are also free of wrong answers to questions asked.
  - For example, the Online Assessment Tools K- 8th Science- Assessment Generator is free of technical errors.
  - For example, the Scientists section in the Online Library provides information on different scientists and their accomplishments. The resources have fact sheets that students can use when researching that scientist. This digital component is free of technical errors.

TPS STEAM into Science Grade 7

Indicator 9.2

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

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

Not Scored

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

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

Evidence includes but is not limited to:

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

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

TPS STEAM into Science Grade 7

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 7

Indicator 9.3

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

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

Not Scored

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

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

Evidence includes but is not limited to:

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

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

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

- The materials do not provide teacher guidance for the use of embedded technology to support and enhance student learning.
    - For example, the materials lack teacher guidance for the use of embedded technology in the *STEAM Activity Guide – Grade 7 Teacher Edition*. Materials state, "Please refer to your school's computer safety policy for work that involves students using computers and the Internet."

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

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

- Materials are available to parents and caregivers to support student engagement in online components.
  - For example, 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.