# TPS Steam into Science Grade 1

## TPS Steam into Science Grade 1 Executive Summary

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

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

### Section 2. Instructional Anchor

- The materials are 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 anchor some the learning in phenomena and problems as the key lever for driving learning and student mastery of disciplinary knowledge and skills.

### Section 3. Knowledge Coherence

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

### Section 4. Productive Struggle

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

### Section 5. Evidence-Based Reasoning and Communicating

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

### Section 6. Progress Monitoring

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

- The assessments are somewhat clear and easy to understand.

## Section 7. Supports for All Learners

- The materials provide some guidance on fostering connections between home and school.
- The materials include some listening, reading, writing, and speaking supports to help Emergent Bilinguals meet grade-level science content expectations.
- The materials include some 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 some practice and review opportunities that support instruction.
- The materials include classroom implementation support for teachers and administrators.
- The materials provide implementation guidance to meet variability in program design and scheduling.

## Section 9. Design Features

- The visual design of materials is somewhat 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 1

## 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. | M |
| 3 | Materials strategically and systematically develop students' content knowledge and skills as appropriate for the concept and grade level as outlined in the TEKS. | M |
| 4 | Materials include sufficient opportunities, as outlined in the TEKS, for students to ask questions 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 |

## Meets | Score 4/4

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

Materials provide multiple opportunities for students to develop, practice, and demonstrate mastery of grade-level appropriate scientific and engineering practices as outlined in the TEKS. Materials provide multiple opportunities to make connections between and within overarching concepts using the recurring themes. Materials strategically and systematically develop some students' content knowledge and skills as appropriate for the concept and grade level outlined in the TEKS. 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.

Evidence includes but is not limited to the following:

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

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

share the results with the class. In the *Learn by Doing STEAM Activity Reader Book Teacher edition*, two activities use the design engineering process: Activity 5, Designing a Windsock, and Activity 2, Design Challenge (they design a device to slow the melting of ice cubes).

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

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

- Materials provide opportunities for students to use recurring themes in making connections between and within overarching concepts. Multiple activities reference patterns, systems, structures, and functions to allow recurring themes, and there are multiple investigations that reference patterns, systems, structures, and functions to allow recurring themes.
- Materials provide opportunities for students to use some of the TEKS-defined recurring themes in making connections between and within overarching concepts. Some activities reference patterns, systems, structures, and functions to allow recurring themes. For example, The first chapter in the *Learn By Doing STEAM Activity Reader Book Teacher Edition* focuses on the physical properties of matter, solid, liquid, gas, and other properties (shape, color, and texture). This is continued into Chapter 2, where the children learn about the different physical states of water (solid, liquid, and gas). In Idea Box 3, the class discusses the physical properties of the three forms of water. In Chapter 6, they again revisit the physical properties of water as they discuss the water cycle that involves all three forms. In Chapter 8, Activity 5, Sorting Soil, the children explore the physical properties of soil, separating its components according to size, shape, and color.
- Materials provide opportunities to connect within overarching concepts and recurring themes. Student textbooks center around five core content areas: Scientific and Engineering Practices, Matter and Energy, Force, Motion and Energy, Earth and Space, and Organisms and Environments. The Scope and Sequence also identifies the same five core areas. The materials provide opportunities for the overarching concepts to connect. For example, one of the lessons is “In What Ways Can Water Change?” followed by the lesson “What Happens to Materials When They are Heated and Cooled?” Lastly, the lesson “Heating and Cooling” wraps up the concept of heat causing change. This order allows students to make connections sequentially.

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

- Materials provide strategic guidance and connections to the grade-level TEKS by including them at the beginning of each lesson for teacher guidance. For example, the TEKS are at the top of the pages in the Teacher Textbook, and the activities listed follow those TEKS. The TEKS listed are appropriate for the content and grade level.
- Materials explain how the program is structured with a rationale for the sequence of units. The Teacher Program Guide states, "Our team utilizes a by standard, strand and/or learning cycle structure which engages students in active interaction with the content." The *Teacher Textbook* and support library house the Scope and Sequence of detailed documents providing information for how content builds. In the *Teacher Textbook*, each lesson plan provides scaffolding

information to explain how content builds across some grades, but vertical alignment information is inconsistent.

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

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

# TPS Steam into Science Grade 1

## 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.

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

## Partial Meets | Score 2/4

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

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

Evidence includes but is not limited to:

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

- Materials embed phenomena in some lessons to support students in constructing, building, and developing knowledge within the teacher edition and teacher textbook materials, however, the teacher guidance is not clearly defined. Materials reference a Phenomena Classroom Chart, but it is unclear where the resources are for the chart and when to build it. For example, the *STEAM Activity Guide Teacher Edition* provides a Vignette of each Instructional Segment. It provides guiding questions and anchoring phenomena. The guiding questions in the Organisms and Environment segment include: How are parents and their children similar and different? How do animal parents and children interact to meet their needs? How do animals communicate and make sounds? The Anchoring Phenomena are "photos and videos of lion cubs and adult lions interacting in nature." The photos are not pictured in the Teacher's Guide, nor does it state where they are located.
- Materials provide some opportunities for students to develop, evaluate, and revise their thinking as they figure out phenomena and define/solve problems. For example, in the Learn by Doing Steam Activity Reader, students are to predict and explore changes in matter caused by

heating. Students analyze data and results and then come up with a solution to the problem of how to keep ice from melting in a drink. The *STEAM Activity Guide Teacher Edition* provides guiding questions and anchoring phenomena. In the Organisms and Environment segment, the Anchoring Phenomena are "photos and videos of lion cubs and adult lions interacting in nature." In the *Steam Activity Guide* lesson vignette, students will learn about their family traits and compare and contrast their appearances to their parents. Students will relate how animals care for their young to help them survive.

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

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

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

- Materials clearly outline for the teacher the scientific concepts and goals behind each phenomenon and engineering problem. In the Teacher Textbook, at the beginning of every chapter, a student objective clearly defines the lesson goal. The purpose of the lesson on properties is as follows: "Students will be able to classify matter by physical properties, including shape, relative mass, relative temperature, relative flexibility, and whether material is solid or liquid." The Teacher Textbook lessons contain an Objective that outlines the scientific goals for each lesson. In the Interdependence lesson, the objective states, "Students will gather evidence of interdependence among living organisms such as energy transfer through food chains and animals using plants for shelter."
- Materials guide the teacher on the scientific concepts of the lessons. For example, the Teacher Textbook lessons contain a section called "The Science" that outlines the scientific concepts for each lesson. The Interdependence lesson lists living things' characteristics, habitats and ecosystems, and relationships within an ecosystem. The Teacher Program Guide offers explanations and reasoning, starting with the order the teacher should deliver the materials, continuing with TEKS and Vertical alignment, assessment, and concluding with a description of "How the Content Supports Teachers."

# TPS Steam into Science Grade 1

## Indicator 3.1

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

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| 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. | PM |

## 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 sometimes within the boundaries of the main concepts of the grade level.

Evidence includes but is not limited to:

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

- Materials are vertically aligned and designed for students to build and connect their knowledge and skills. For example, in Learn By Doing STEAM Activity Reader Book - Teacher Edition, when looking at a specific TEKS, Earth and Space, regarding Earth materials, the grade level materials explore shapes, color size, and texture and make observations as a foundation for the next grade level. In the STEAM Activity Guide, "Amelia Rose Explores Earth and Space," the teacher reads through the story and activity. The student then completes the project and activities through the unit which align with the kinder lessons.
- Materials are designed to build content knowledge within each chapter. Examples include the Learn by Doing STEAM Activity Reader Books, beginning with the storyline, idea boxes for discussion, and finally, in the activities sections. Science knowledge builds as students move throughout the chapters. The STEAM Storybooks build content knowledge of energy and force in this manner. Chapter 2 introduces the concept of energy and its different forms. The students investigate heat energy with idea box 2 and Activity 1. In Chapter 3, students revisit the concept of energy and its role in creating forces that do work. The Energy concept is investigated in idea boxes 1 and 2. In Chapter 4, magnetism as a force is introduced, and in Activity 1, students explore magnets.

# TPS Steam into Science Grade 1

- Materials are designed to build content knowledge across grade levels. In the Teacher's Guide, examples include scaffolding info that consists of the previous kindergarten standard and future standards for grades 2-5 in each chapter. In the Teacher Textbook, the TEKS for the prior and following grade levels are listed under the section labeled Scaffolding. In the Teacher Textbook - Grade 1 Science, in the Heating and Cooling chapter, the objective for kindergarten and the TEKS for second grade that relate to heating and cooling are listed in the Scaffolding section.
- Materials present content in a way that builds complexity. For example, in the Teacher's Guide, students examine how a car moves. They record how an object moves. Students predict how an object will move, test the object, and describe the movement.
- Materials are aligned and provide connections to prior knowledge. Materials offer a K-8 program and provide a grade-level vertical alignment document demonstrating how students build and connect knowledge across grade levels. The Teacher Supports explain how the materials are vertically aligned. The document titled "Horizontal and Vertical Alignment Information" states, "As students progress within each grade, the STEAM storybooks are the first level in a series of TPS curricular materials, horizontally aligned to allow the students to engage in a curriculum that builds on knowledge and skills aligned with the Texas Essential Knowledge and Skills."

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

- Materials are intentionally sequenced to scaffold learning in a way that allows for deeper understanding. For example, in the Learn By Doing STEAM Activity Reader Book - Teacher Edition, Chapter 3, "The Treehouse Flag," the teacher reads a story. The students do activities like drawing, then designing. They progress the lesson to increase a deeper conceptual understanding. In the Teacher Textbook, the lesson on Scientific and Engineering Practices, there is an objective, the "Scaffolding Information" section, that lists what is covered vertically by grade level. The following section, "The Science," refreshes the prior knowledge learned in previous grade levels, then "Common Misconceptions," and then the "Lesson Plan."
- Materials include a concrete progression before abstract reasoning when presenting concepts that allow for an increasingly deeper conceptual understanding. For example, in the STEAM Learn By Doing, Chapter 2, Activity 5, students explore how heat energy can change water from a solid to a liquid and then a gas before drawing a representation of their results in the book. In the Teacher Textbook chapter, "Earth and Space," students experiment to observe the behavior of how water flows before reading about bodies of water on Earth and answering questions in the book. Then, in the Teacher Textbook, students will identify and describe a variety of natural sources of water. Students look at pictures and learn about the different types of water sources, including color, clarity, size, shape, and if they contain salt. The materials progress, and students learn how water can move rock and soil particles from one place to another.
- Materials are intentionally sequenced to scaffold learning. For example, in the Learn By Doing STEAM Activity Reader Book, Grade 1- Teacher Edition, Chapter 2, "Louis' Thirsty Story," the information is scaffolded and deepened with complexity through the idea boxes. In idea box 1, the students are asked what happened to the ice cubes. In idea box 2, they are asked what happened to Louis' water. In idea box 3, students discuss the physical properties of water. In idea box 4, students are asked how the problem was solved. In idea box 5, students are asked to deconstruct ice cubes. In the Teacher Textbook - Grade 1 Science, students use what they have learned in the Learn By Doing STEAM Activity Reader Book to complete the activity pages for "In What Ways Can Water Change."

# TPS Steam into Science Grade 1

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

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

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

- Materials sometimes provide mastery requirements that are outside the boundaries of the main concepts of what is appropriate for the grade level. For example, in the Teacher Textbook, in the Matter and Energy Lesson, the objective states, "Students will be able to predict and identify changes in materials caused by heating and cooling, such as ice melting, water freezing, and water evaporating." In grade 1, students are focusing on melting and freezing. The introduction of water vapor and the physical changes of water in terms of evaporation and condensation are not introduced in the TEKS until 3.6C.
- Materials include specific learning targets and define the boundaries of the main concepts of the grade level. However, sometimes content that is not within the boundaries of the main concepts of the grade level become introduced in the text and then bleed into the mastery requirements. For example, in the traditional lesson for Water, there are two pages of student text that cover the process of erosion. Erosion is outside the boundaries of the main concept of earth materials in grade 1. The key words are then presented to students, and they don't include the word erosion. Then, in the Focus Questions section where students are instructed to "use the science to help you answer the questions," they are asked to demonstrate mastery of the concept of erosion with two questions: "Why are the rocks at the bottom of rivers usually smooth?" and the provided answer is "Due to erosion." and then "Water can erode soil and rock. One example of this is a meander. Draw a picture of a meander and write a sentence about what erosion is." This example illustrates how far outside the boundaries some areas of the materials are.
- Materials sometimes clearly define the boundaries of content that students must master for the grade level. However, in the traditional lesson on weather, students are expected to explore with charts of average monthly temperatures and precipitation to notice climatological patterns. Students in grade 1 should be noticing daily weather and as the TEKS demand, "explain the

impact of weather on daily choices." Students should be focused on daily weather or weather within the week, not long-term climatological patterns.

# TPS Steam into Science Grade 1

## Indicator 3.2

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

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

## Partial Meets | Score 3/6

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

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

Evidence includes but is not limited to:

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

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

support teachers, as it does not reference specific learning. In the *Learn By Doing STEAM* Activity Reader Book, Teacher Edition, there are several documents that, when used together, provide specific learning.

- Materials include some guidance that supports teachers in understanding how new learning connects to previous and future learning across grade levels in the Scaffolding Information within the lesson. In the beginning of the Traditional lessons, the Scaffolding Information section provides some information on knowledge students should already have, then lists the TEKS for the previous and future grade levels. Listing the TEKS does not provide enough guidance about connection to future learning. Materials provide minimal guiding documents or information that support teachers in understanding how new learning connects to previous and future learning across grade levels.
- The instructional materials include some guiding documents that support teachers in understanding how new learning connects to previous and future learning across grade levels. For example, The *Learn By Doing STEAM* Activity Reading includes an “Essential Content Guide” that describes what science, math, and ELAR concepts are taught in each unit. There is a horizontal and vertical alignment information document in the Online Library for Teacher Support. This provides general information and does little to help teachers understand how their specific grade-level content connects to prior or future learning.

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

- Materials contain explanations and examples of science concepts for teachers. Examples include, in the Teacher Textbook, The Science section of the lesson is a synopsis of what students have learned and will learn. Background and Preconceptions sections are also in the lessons to help teachers understand before starting the activities. The background information for teachers provides explanations and examples of science concepts. In the Teacher Textbook, before each experiment, the materials offer a section titled "Background and Misconceptions." In the experiment, "What Happens to Materials When They are Heated or Cooled?" the materials provide background information about how materials can be altered and how the molecules react.
- Materials contain explanations for teachers on grade-level misconceptions to support teachers’ subject knowledge. For example, in the Teacher Textbook, the Common Misconceptions section helps the teacher "know better." Background and Preconceptions sections are also in the lessons to help teachers understand before starting the activities. In the "Heating and Cooling" lesson, the section provides background information about states of matter and how they change. The same lesson contains a section titled "Common Misconceptions" that states, "Students may believe that the white cloud they see coming from boiling water is a gas. In fact, gaseous water, or water vapor, is an invisible gas that will appear below this cloud. The white cloud is made of tiny water droplets as the gas condenses."
- Materials guide teachers on the recognition of barriers to student conceptual development. In the Teacher Textbook, "Scaffolding" describes their expectations for the future in science with the concept.

# TPS Steam into Science Grade 1

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

- Materials do provide a purpose or rationale for the instructional design. The Teacher Program Guide in the Support Notes for Teachers states that the content scaffolds as the characters go alongside the diverse students. The Teacher Program Guide K-8, under the section Support Notes for Teachers, gives information about the rationale of how the program was designed. For example, "The Steam Storybook was designed with two key purposes: first to teach science through the prism of STEAM, science, technology, engineering, and math as an approach more relevant to students' lives."
- Materials explain the intent of the instructional design of the program. The Teacher Program Guide there describes the philosophy of science teaching and learning. They explain that we learn best by doing and the importance of scientific understanding for all students. They also explain the science teacher's role in developing critical thinking, problem-solving, and an appreciation of the scientific process. The Teacher Program Guide 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.

# TPS Steam into Science Grade 1

## Indicator 4.1

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

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| 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, materials provide reading through storytelling, thinking through the idea boxes, and acting through the design and engineering pieces. There are writing prompts and opportunities for students to describe what they know or have learned. In the Student Textbook, there are some writing activities. Students read like scientists in the Learn By Doing STEAM Activity Reader Book. Additionally, this component includes idea boxes to support the teacher in having students think like scientists and stimulate critical thinking through class discussion of the chapter texts. Following each chapter, activities allow the students to act as scientists or engineers investigating and designing engineering solutions. The activity sections also include opportunities for the students to engage in age-appropriate letter-word analysis, writing, and math. In Chapter 6, "Where Does All the Rain Go?" students read and think like scientists and

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

- Materials provide learning activities that support students' meaningful sensemaking through reading, writing, thinking, and acting as scientists and engineers. In the STEAM Activity Guide, students read, write, think, and act like scientists. In Matter and Its Properties, Explore It #1, students work as scientists and engineers to dissect a food item to determine what was in it. Students then conduct a few investigations to determine the properties of each component. Students are introduced to identification and measurement processes.
- The materials provide teachers with guidance on labs in the "Science is a Verb" explanation found in the Teacher Textbook that supports sensemaking. For example, the materials state, "The critical portion of any lab is to have a thorough discussion of the results and student thinking after the experiment is complete. It is suggested you take as much time as the experiment to have this discussion with students. The real learning occurs not from hands-on experiments, but from a deep discussion of the experiment while making connections to the concept they are learning." The guidance supports sensemaking by taking the lesson beyond a hands-on investigation and building conceptual knowledge through discussion.

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

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

# TPS Steam into Science Grade 1

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

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

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

- Materials support students to act as scientists and engineers who can learn from engaging in phenomena and engineering design processes, make sense of concepts, and productively struggle. In the Teacher Textbook - Grade 1, students measured three objects around the classroom. Students are asked to create a model of one of the objects they learned about. Next, students are asked what their model does well and what are the limitations of the model.
- Materials support students to act as scientists and engineers who can learn from engaging in phenomena and engineering design processes, make sense of concepts, and productively struggle. In the Teacher Textbook, there is an investigation about ice and steam. Students will predict and observe an ice balloon at the beginning and end of the day and draw what it looks like. Next, they will do the same with a jar of hot water. Students will show what they have learned by completing a diagram.
- Materials provide student engagement and perseverance of concepts through productive struggle while acting as engineers in the Scientific and Engineering Practice Project in the STEAM

# TPS Steam into Science Grade 1

Activity Guide. In this project, students find a problem, design, and engineer a solution. Students conduct the research, plan, build a mock-up, prototype, and test it. They evaluate the results to determine how to make it better. In the "What's the Matter?" project, students first dissect a food item. They then conduct investigations to determine the properties of each component. They decide on problems and follow the steps to design, explain and productively struggle through the testing of the design.

**August 2023**

# TPS Steam into Science Grade 1

## Indicator 5.1

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

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

## Partial Meets| Score 2/4

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

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

Evidence includes but is not limited to:

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

- Materials include some prompts for students to use evidence when supporting their hypotheses and claims. For example, in the STEAM Learn By Doing, Chapter 6, Activity 1, students hypothesize which day will have the most rain and then collect and measure rain throughout the week. The Analysis and Discussion of Results states, "Discuss which day had the least and the greatest amounts of rain. Ask them to point to the results on their bar chart." In the engineering activity in the Teachers Textbook, students create a possible solution to solve a problem. Students are prompted to collect evidence, analyze results and consider improvements. In the Steam Activity Guide, Force, Motion, and Energy Chapter, Activity, students work in small groups to recreate an experiment from the story, "What's Done is Done." Students then prove whether the results were accurate, and record a video of what happens when eggs are cooked and butter is melted. Next, students heat some milk and record the results. Lastly, materials state, "Discuss how your work evidence that some changes caused by heating or cooling can be reversed and some cannot."
- In the Steam Activity Guide, Force, Motion, and Energy, Student Activity, students work in small groups to complete an activity. At the end of their activity, they will look through magazines and

books to discover other substances that can or cannot be changed by heating and cooling. Students then provide evidence for comments by giving references to what they read.

- In the Learning by Doing STEAM Reader Teacher Edition, for example, in Chapter 5, Activity 7, Movement, the students are asked in the Discussion of Results section to discuss their results and identify important evidence and engage in scientific discussion. In the Teacher Textbook, in the Project Based Learning section in the back, students use evidence to support their claims.

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

- Materials include some embedded opportunities to develop, utilize, and apply scientific vocabulary in context. In the STEAM Learn by Doing Activity Book, students read chapters about science content with embedded scientific vocabulary. Students then apply the vocabulary to some of the activities following each chapter. In Chapter 6, students read about water. The embedded vocabulary words include "chart, evaporation, saltwater, freshwater, and rain." In Activity 1, students use vocabulary words to predict and observe which day has the most rain.
- Materials include some embedded opportunities to develop, utilize, and apply scientific vocabulary in context. In the STEAM Learn by Doing Activity Book, students read chapters about science content with embedded scientific vocabulary. Students then apply the vocabulary to some of the activities following each chapter. In Chapter 9, students read about food chains. The embedded vocabulary words include *dependence*, *food chain*, and *habitat*. In activity 7, students utilize the vocabulary words to draw a food chain for coyotes and rabbits.
- Materials include some embedded opportunities to develop and utilize scientific vocabulary in context but do not include opportunities to develop and utilize scientific vocabulary after having a concrete or first-hand experience. In the Teacher Textbook, Scientists chapter, Investigation: Name the Scientist, students are given guidance during the discussion portion of the activity. Teachers are to "Help students correct their own mistakes and encourage students to continue practicing with new vocabulary." In the Learn by Doing Steam Activity Reader, Chapter 1, students learn about different vocabulary words as the teacher reads the story. For example, "You are correct; matter is made of atoms, which means everything around us, including ourselves, is made of atoms." During Activity 7, the teacher is instructed to review vocabulary using the TPS vocabulary cards. There were sufficient opportunities for developing and utilizing the vocabulary in context after having a concrete or firsthand experience. In the Teacher Textbook, in the Properties lesson, the teacher introduces the properties, shows the objects, and discusses vocabulary as the students discover them.
- Materials include word work activities with science vocabulary. In the Learn By Doing STEAM Activity Reader Book, vocabulary words are printed in bold. Students are then asked to complete an activity to pronounce the words in syllables, sort by initial sound, sound out the words, and match the words to a picture.
- Materials provide defined vocabulary lists. In the Teacher Textbook, there is a section labeled "Key Words." It is evident that these are the vocabulary words for the unit. They are listed with the definition beside each word.

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

- The Learn By Doing STEAM Activity Reader contains some opportunities for students to develop how to practice argumentation and discourse. In Chapter 2, Activity 1, students observe changes in matter caused by heating and communicate the information to others. The text says, "They

should be able to describe which condition caused the ice cubes to melt faster and why this happened," and "Ask the children to actively listen to other children during sharing and participate in discussions respectfully." In Chapter 5, Activity 7, students observe how objects move down a ramp and discuss the results. The text says, "They should be able to describe which condition caused the ice cubes to melt faster and why this happened," and "Encourage the children to actively listen to other's explanations and identify important evidence and engage respectively [sic] in scientific discussion."

- Materials provide opportunities to listen actively to others' explanations during different activities. For example, in the Learn by Doing Steam Activity Reader, Chapter 5, the teacher will discuss with the students why objects moved the way they did. Teachers must "encourage the children to listen actively to others' explanations, identify important evidence, and engage respectfully in scientific discussion." In the Learn by Doing Steam Activity Reader, Chapter 6, students are reminded to actively listen to others' explanations and engage in scientific discussion.
- Scientific argumentation is explained in the PBL section of the Teacher textbook, but no evidence was found of its use or integration throughout. STEAM Activity Guide has references to scientific argumentation in the Vignette. It tells the students to "Construct an argument" but does not support their development and is not integrated throughout. Scientific argumentation is explained in the Teacher Textbook a few times toward the end of the book, but only in a small section. It is described and walks the teacher through the explanation to share with the students. In the STEAM Activity Reader, "the standard argument" is only mentioned once and not integrated.

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

- Materials provide some opportunities for students to justify explanations of phenomena and solutions to problems using verbal arguments to problems using evidence acquired from learning experiences but no clear teacher guidance. In the STEAM Activity Learn by Doing Book, Chapter 6, Activity 6, students investigate erosion using a steam table. The section "Analysis and Discussion of Results," states, "Ask the students to share the drawings of their results and use their words to describe what happened. Discuss what the advantages and limitations of the stream table are. Ask the children if the stream model worked as expected. If the materials moved on the table, the movie was were the cause and the effect?" In Chapter 6, Activity 6, students investigate erosion using a steam table. The section called "Analysis and Discussion of Results" states, "Remind the children to listen actively to others' explanations to identify important evidence and engage respectfully in scientific discussion."
- Materials provide some opportunities for students to construct and present developmentally appropriate written and/or verbal arguments to justify explaining phenomena and solutions to problems using evidence acquired from learning experiences but no clear teacher guidance. In the Learn by Doing Steam Activity Reader, Chapter 3, Activity 5, each student is asked to explain their design to the class and if it meets the design criteria. In the Teacher Textbook, Scientific and Engineering Practices chapter, students will discuss failure points about different groups' solutions as a class.
- Materials provide some opportunities for students to justify explaining phenomena but no clear teacher guidance. In the STEAM Activity Guide, there is only one reference to phenomena. This does not give students sufficient opportunities to construct and present developmentally

appropriate arguments. In the Teacher Textbook, phenomena are mentioned twice, in two separate lessons in the PBL section. This is insufficient for providing opportunities for constructing and presenting developmentally appropriate arguments that justify explanations of phenomena.

# TPS Steam into Science Grade 1

## Indicator 5.2

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

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

## Partial Meets | Score 2/4

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

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

Evidence includes but is not limited to:

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

- The materials provide some teacher responses to possible students' responses. The materials divide teacher guidance into correct student responses, incorrect student responses, and partially correct student responses. The Teacher Program Guide recommends that students responding correctly be provided with "Level 2 assessment questions" from the "Online Library - Assessment tools" for the TEKS being taught and affirm comprehension. The guide continues to recommend that students responding incorrectly be provided with "Level 1 assessment questions." The materials state, "A student responds incorrectly - use the Online Library - Assessment tools; choose Level 1 assessment questions for the TEKS being taught…. Determine if there is a misconception and resolve." Materials do not include specific guidance on the use of questioning to deepen student thinking.
- Materials state teachers should respond the same to partially incorrect responses but expect a shorter time frame to resolve misconceptions. Additional suggestions to respond to struggling learners include studying keywords and using them correctly in a sentence, using "an arts project from the STEAM Activity reader book for relevant TEKS," and going back to "an earlier grade to ensure prior grade learning is completed."

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

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

- Materials include some teacher guidance on how to scaffold understanding of scientific vocabulary. The Teacher Textbook provides general teacher guidance on using the vocabulary, such as encouraging students to use the glossary and the word walls to understand vocabulary.
- Materials do not include specific guidance on supporting students' development of scientific vocabulary in context. Materials include a list of Key Words in the Teacher's Textbook that lists vocabulary words and definitions used in the chapter. According to the chapter, Traditional Lesson Plans, the vocabulary pages are included in the Blackline Masters and are encouraged to be sent home for students to study. The keywords listed are introduced to students in the context of the section. Students add them to their personal word glossary. Materials do not include guidance for teachers on how to scaffold and support students’ development of specific terms.
- Materials include general teacher guidance on supporting students' development of scientific vocabulary in context. For example, in the Earth and Space chapter, a Learning Strategies and Scaffolding section states, "When they are engaged in such activities, be sure to highlight the chapter vocabulary in each activity," and "To reach all learners better, teach vocabulary words in

three ways; visually (showing examples), with an auditory component (making noises with different materials), and kinesthetically (allowing students to feel different types).

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

- Materials provide some teacher guidance on preparing for student discourse. In the Teacher Textbook Literacy Challenge section, materials include opportunities for scientific debate. Materials explain that debate is not an argument and that scientists use data to support their argument. In the "Organisms and Environment" chapter under the Literacy challenge, students pick a side and argue scientific viewpoints. Students think about frogs and the different scientific debates that are linked to frogs. Students work in pairs and argue different scientific viewpoints over frogs being used in research. Materials lack teacher guidance for supporting students in constructing verbal claims.
- The STEAM Activity Guide provides teacher prompts for discussion within lessons but provides no support for guiding discourse between students. For example, In Amelia Rose Explores materials include a section titled Let's Talk About it and it prompts, " Ask students if they know how to make cold chocolate become "warm and runny" and "Ask students what they think will happen to the chocolate once the heat is turned off." Materials do not include any further guidance on how to support this discourse or how to guide students to use evidence to support their claims and explanations.
- In the front matter of the Learn By Doing STEAM Activity Reader Teacher Edition, materials include general guidance on preparing for student discourse and supporting students in using evidence to construct claims. It states that students should write about their experiments and they should include "The analysis of their results. Plan to discuss the results as a class and focus on key areas such as: What their results indicate or mean and differences between different student experiments. What conclusions can be drawn." In Chapter 2 in Activity 1 ice cube experiment, students discuss their results. The LBD Teacher guide only states, "Remind them to listen actively to others' explanations to identify important evidence and engage respectfully in scientific discussion."Materials do not provide any other teacher guidance on how to support students in preparing for and participating in age-appropriate discourse supported by evidence.
- Materials provide guidance on creating written drafts collaboratively in the Learn by Doing Steam Activity Reader, Introduction, Creating and Editing Drafts. It states. "... these written drafts with the children based upon the subject and storylines in each chapter." Guidance continues to provide an outline of draft steps that include planning, developing drafts in oral pictorial form, revising drafts by adding details, and editing drafts for basic conventions. Written draft guidance does not include any guidance on including scientific evidence to support claims guidance, only reference writing about the "subject and storylines".

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

- Materials provide some support and guide teachers in facilitating the sharing of students' thinking. In the Learn by Doing STEAM Reader, the materials provide broad teacher guidance to encourage the students to share what they learned with the class and engage in scientific discussion.
- In the introductory pages of the Learn By Doing STEAM Activity Reader Book TE, the materials provide some general guidance for facilitating the sharing of students' thinking and finding

solutions throughout the materials. For example, under the heading Scientific Method, the materials say, "At the end of each experiment ask the children to share their work and actively listen to other children during the sharing and participate in discussions in a respectful manner." While the materials provide an opportunity for students to share their findings, they do not provide teacher supports to facilitate discussions that include feedback tips and examples. The activity plan does not provide any guidelines for teachers to measure success criteria during discussions.

- Materials lack support and guidance for teachers in facilitating the sharing of students' thinking and finding solutions. According to the guidance in the *Learn by Doing Steam Activity Reader*, *Design Engineering Process*, the importance of communicating is essential. "Encourage the children to actively listen to other children and participate respectfully during discussions." Materials do not provide additional guidance.
- Materials provide support and guidance for teachers in facilitating the sharing of students' finding solutions. For example, students explore magnets in the Learn By Doing STEAM Activity Reader Teacher Edition, Chapter 4, Activity 1. The "Analysis and Discussion of The Results" section states, "Ask The children to describe The movement of The magnetic objects when the magnet was close to them. Ask them to look at their results and see if there is a pattern. What did the objects that tested as magnetic have in common?" The "Conclusion" section states, "Discuss with the children whether their predictions were correct." In Chapter 5, Idea Box 2, The text suggests that the teacher demonstrate and discuss the change in seasons and day and night by using models and probing questions. "Ask them what changes they expect to see in the sky between the seasons. Ask how day and night change with seasons; longer periods of darkness in the winter and longer periods of daylight in the summer."
- In the Steam Activity Guide, Matter and Properties, students complete a sink or float activity. The guidance states that there may not be enough time for all students to test material, which is okay because they will share information. Materials do not include teacher guidance for facilitating the sharing of students' finding solutions about materials that sink or float.

# TPS Steam into Science Grade 1

## Indicator 6.1

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

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

## Meets | Score 2/2

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

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

Evidence includes but is not limited to:

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

- The materials provide a student and teacher edition of the Assessment Guide. This booklet contains both traditional assessments and project assessments for TEKS covering the following concepts: scientific and engineering practices; force, motion, and energy; Earth and space; organisms and environments. For example, within the study of organisms and environments, the assessment guide contains nine designated assessment activities (formative and summative) that contain both traditional test questions and project-style application tasks.
- Materials provide diagnostic assessments. The Teacher Program Guide contains a section called Support Notes for Teachers. The Support Notes for Teachers segment in the TPG explains the Diagnostic assessments, "The interactive software tool provides automated grading for multiple choice questions; Benchmark tests (Level 1, 2 and 3 Assessments) in Online Library - Blackline Master."
- Materials provide formative assessments. The formative assessments include "Level 1 questions in the interactive software tool or assessment generator; STEM project Explore 1 and 2; Let's Talk About It, Let's Draw It, Stop, Look, Think! - Amelia Rose arts projects." The Assessment Guide Grade 1, Chapter-Matter, includes assessments such as Open Questions, Tasks, and Multiple Choice. For example, the task Chocolate Molds asks questions such as, "Is the melting

of chocolate a reversible change?". "Can you think of other examples of reversible changes involving melting and cooling?"

- Materials provide summative assessments. The Summative assessments are "Level 2 and 3 questions in the interactive software tool and assessment generator; Test yourself, Focus questions, Multiple choice, Open-ended, Science makers, Performance tasks with rubric; STEMproject Explore 3. Each chapter in the Student Textbook includes a What Have You Learned section and a Test Yourself section. In the Earth and Space: Water unit, the What Have You Learned directs students to draw a stream, ocean, lake, puddle, pond, and river. The Test Yourself section includes six three-choice questions that ask students to identify clipart pictures of bodies of water.
- Materials include a range of embedded assessment teacher resources. In the Program Overview, the publisher states that the program design offers multiple opportunities to master the content required in the TEKS. In the Teacher Textbook front matter, a section called Summary Steps and breaks them down into four steps. Within each step is applicable assessment information. For example, in Step 1 - the Learn By Doing Activity Reader Books, the materials state, "Use the Online Library - Assessment Generator - before completing the related activities following each story, have the students verbally respond to Level 1 questions; discuss as a class. It provides teachers with information about what students know. TEKS, including TEKS 1, house the questions." Then, the materials state, "Complete the activities. Use the Level 2 questions for the science content taught and record results by students using the assessment matrix."It also states, "These reader books [Learn by Doing STEAM Activity Reader Book] include expository text, hands-on activities, and assessment tasks." The Teacher Textbook, Field Trip section, states "the creation or use of the TPS assessment generator content, both formative and summative for student expectations."

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

- Materials assess all student expectations over the breadth of the course and indicate which student expectations are being assessed in each assessment. The Online Assessment Generator Grade 1 allows the teacher to choose which TEKS they would like to assess, and it provides the answers. For example, for TEKS 10.D, the question is, "If it was snowing, what would you expect the temperature to be like?". The multiple-choice answers are warm, mild, and cold. The Assessment Generator is categorized by grade level, question type, learner level, and TEKS, enabling the teacher to evaluate all student expectations. The online Assessment Generator can create assessments for any grade-level standard. The Benchmark Test tool available to teachers assesses all student expectations and indicates the expectations assessed at the top of each page.
- The materials include TEKS-aligned assessments that align the curriculum standards and student expectations to measure student understanding and mastery of the concepts and skills taught in the materials. The TEKS addressed and taught in that section or chapter are at the top of the page. It allows for quick reference and guidance for the teachers and students. For example, the Using Tools section has a step-by-step lesson plan and the TEKS that are the focus of the investigation at the top of each page in the book. Assessment Guide Grade 1 Teacher Edition, Chapter Earth and Space, TEK 9 Earth and Space lists the multiple choice questions.
- Materials indicate which TEKS are assessed across the breadth of the course. In the Teacher Program Guide, the materials within the Progress Monitoring information describe the Focus Questions, Performance Tasks with Rubrics, TEKS by Chapter assessment questions, and

Assessment Generator. Under Performance Tasks with Rubrics, the materials state, "For each TEKS, a performance task with a rubric is provided. Grade students and enter results onto the report card." The By TEKS, Chapter assessment questions at the end of each chapter, and the materials note, "The major assessment tools are those in the Online Library - Assessment tools." Under Assessment Generator, the materials say, "Teachers can create, save and print assessments to include chosen TEKS and skill levels. The tests can be personalized by the student or by class. Manual grading is required."

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

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

- The assessments in these materials integrate scientific and engineering concepts and practices within the themes of the TEKS. For example, the assessments integrate, include, and assess scientific and engineering practices within the first TEKS band. The front matter of the teacher edition of the Assessment Guide organizes this content for all grade levels under the headings: Questions and Answers (1.1.E, F, G), Solving Problems (1.1.G), Working Safely and Responsibility (1.1.A, B, C), and Using Tools (1.1.D, E, F). Under each heading, some segments include the program objective and scaffolding Information for each grade level. For example, under the heading Solving Problems in the First-grade materials, the objective reads, "Students will be able to identify and explain a problem and make predictions based on observable patterns in nature. They will learn that scientists investigate different things in the natural world and use tools to help in their investigations." The Assessment Guide contains activities integrating scientific concepts and science and engineering practices with recurring themes and concepts. In Matter and its Properties: Chocolate Molds, have students melt chocolate and observe the changes.
- Materials include assessments integrating scientific concepts and science and engineering practices with recurring themes and concepts. In the STEAM Learn by Doing Steam Activity Reader, Chapter 5 Activity 7, students follow the scientific method to explore the movement of different objects. Materials include a rubric for teachers to follow and assess the students. In Chapter 8, students act like scientists to sort soil components in Activity 5. The assessment item for the same standard shows photos of three types of soil and lists the adjectives: dark brown, red, light brown, tiny particles, medium size particles, large-size pieces, clumps, and smooth. The text states, “Question: Write words to describe the different soil types. Use the words listed below.” In Chapter 6, Activity 1, Collecting Rainwater, students will collect water using measuring cups, bowls, and a rain gauge. After using tools, the class will create a bar graph and write sentences about their findings.
- The Materials include a Learn By Doing Assessment Rubric. The resource lists the standards, where taught, a specific assessment question, a general assessment question, and a rubric to score students' answers. For 4. B, the specific question is, "After reading chapter 5, ask the students the role of engineers in transport." The general question is, "Students can identify examples of scientists and engineers and what they do {sic}."
- In the Teacher Textbook, the materials include assessments that integrate scientific concepts and science and engineering practices in the How can you use objects from Earth? Investigation. Questions provided include "to get the students started on their inquiry!" After the questions, they construct a model house.

# TPS Steam into Science Grade 1

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

- Materials include assessments that require students to apply knowledge and skills to novel contexts. Specifically, the assessments within the program's Assessment Guides are activities separate from the lessons in the other program materials. This structure allows for assessment within the topic of study but in a new context. For example, in Grade 1, during the study of matter and its properties - heating and cooling, the students engage in an activity called In What Ways Can Water Change and What Happens to Materials When They are Heated or Cooled. The Assessment Guide provides a performance task that requires students to "Draw a flow diagram. Label the flow diagram. What is the process of making your favorite soup? What is the process to store it in portions in the freezer?" and then answer questions about the process. The performance task is separate from the lesson and requires students to apply knowledge and skills about heating and cooling and includes a rubric for scoring and summative questions.
- Students learn about seasons, day and night, and weather in Unit 4. The teacher will use a Sun-Moon-Earth model and discuss how day and night change as the seasons change. Students will observe and chart the weather. Next, students apply their knowledge of weather and seasons in the Earth and Space Performance Task. Under the Earth and Space Performance Task, students draw the season with the fewest hours of daylight and the season with the most. "Include observations of nature and weather that you might make each season, including what plants and animals are doing in those seasons." Assessment Guide First Grade Teacher Edition, Organisms, and Environments, Performance Task: students will research the life cycle of humpback whales and how they raise their calves. Students will note key points and use them in a comparison table to find similarities and differences between humpback whales and humans in how they care for their young. In the Assessment Guide Science Assessment Questions section under the Performance Task Prompt, the "students' task is to look at a picture of someone dressed to perform a particular activity, such as a deep sea diver, and pick out the aspects of his/her clothing and equipment which mimic parts of an animal and the functions they serve."
- The STEAM Learn By Doing Student Book includes assessment items that do not require students to apply knowledge and skills to a new phenomenon or problem. In Chapter 10, students learn about life cycles, and Activity 5 has students draw a chicken life cycle and a human life cycle and compare the life cycles of chickens, humans, and fish. The Assessment Guide question for the same standard uses the same clipart of human, chicken, and fish life cycles and asks students to describe the life cycles below and compare how the young resemble their parents.

# TPS Steam into Science Grade 1

## Indicator 6.2

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

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

## Partial Meets | Score 1/2

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

Materials include some information and/or resources that provide guidance for evaluating student responses. Materials somewhat 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 some relevant information for teachers to use when planning instruction, intervention, and extension. Materials provide some resources and teacher guidance on leveraging 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 some teacher guidance for evaluating student responses. In the Assessment Guide, students draw a picture of the season with the fewest hours of daylight and the season with the most. The assessment includes a Scoring Rubric that describes the quality of answers that would score 0-4. A four-point answer requires, "Students exceed all of the required elements of the prompt." However, this is incredibly vague guidance to provide teachers for evaluating student responses and leaves the scoring up to the interpretation of individual teachers.
- Materials include some resources that guide evaluating students' responses. In the Assessment Guide Grade 1, Organisms and Environment, Performance Task, students will look at pictures of people wearing attire required for an activity—for example, a scuba diver in scuba gear. Students will determine which part of their clothing mimics parts of an animal and the function they serve. The teacher will use the four-point rubric to grade students. For example, to score a four, students must include the following; "All the similar features are identified and labeled, including a description of the function of each feature in both natural and manmade roles." However, materials lack information explaining how similar features are defined in this rubric and guidance for teachers to accurately and fairly evaluate student responses.

- Materials include some information that guides evaluating student responses. In the Learn by Doing Assessment Rubric Grade 1, teacher guidance describes how students will discuss and review recently learned tools. Students will discuss how they would use them to observe, measure, test, and compare. If students can only discuss 30% of the items, they have some proficiency.
- The teachers' editions inconsistently provide assistance for evaluating responses. The Learn by Doing STEAM Reader Book only contains examples for student responses to general questions that are to be investigated during a culminating activity for the content TEKS, located under the Assessment section of the guide's table of contents, but many activities in this guide include no guidance for evaluating student responses. Each chapter in this Reader has multiple activities, sometimes as many as 8 per chapter, and there is no guidance for evaluating students' responses or performance in those activities. This is in sharp contrast to the Teacher Textbook, which offers guidance in red text for every student activity/question.

Materials 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 include some support for the teacher's analysis of assessment data within the teacher materials by providing interactive assessment tools that provide student summary reports and an assessment matrix document tool that teachers can use to record student data and then analyze. The materials offer guidance and direction to respond to individual student's needs with a visual flow chart of assessment resources and paths of response to needs based on data within the Teacher Planning Guide.
- Materials lack guidance documents and resources to support teachers' analysis of assessment data. In the Teacher Program Guide, Program Introduction, overview information details that teachers assess students learning using Level 1 and Level 2 questions from the online library assessment generator. The general guidance states that if students answer either or both questions correctly, mastery is "likely." If students need more opportunities, the teacher guidance offers STEM and Art content, which will help deepen students' learning. The information gathered from the assessment tools lacks specific guidance to support teacher analysis of data when planning core and differentiated instruction. The materials do not offer specifically embedded guidance or feedback in the Assessment Tool Generator, Assessment Guide, or Assessment Rubric.
- Materials provide some guidance documents and resources to support the teacher's interpretation of the data. The materials include an assessment generator that can be used to create a custom assessment of the material; it does not suggest ways to make instructional decisions based on the assessments. Teacher Textbook refers to using the Assessment Generator in creating assessments and then collecting student data utilizing an assessment matrix but then does not guide how to interpret that data to plan instruction.
- Materials provide some guidance and tools to support teachers in responding to data to inform instruction. In the front matter of the Teacher, Textbook materials include an overview flow chart that visually delineates the assessment-instruction process to respond to student needs based on assessment data. The flow chart shows the general steps that teachers can take to address student needs in an overview format. However, these steps are not supported by

guidance throughout the materials. Although the materials contain “Intervention Focus Tutorial” materials to assist students who are not meeting expectations, these supports are not directly aligned with assessment data. For example, for Matter and Its Properties, there is a lower-level version of the material in the Student Textbook. However, this material is not directly correlated to assessment data. Materials provide an alternative scope and sequence, which only suggests slowing the material down and breaking it into smaller lessons. According to the document, How to Use the Program, “If you are a teacher in a specialist school, with students performing at far below grade, you might choose to use this tool and adhere to the Learn By Making Activity Reader Scope and Sequence RTI approach.”.

- Materials include some assessment tools that yield data teachers can analyze and interpret. Within the Teacher Textbook, the "Textbook Work" section guides the teacher through the assessment steps within each investigation. However, these sections do not support analyzing or evaluating the data collected from students' responses. For example, the second part says, "Students should complete the What Have You Learned? exercise. Have students hand in this work for evaluation."The Assessment Guide 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.

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 could be used to support teachers when planning instruction, intervention, and extensions.
- The information gathered from the assessment tools helps teachers when planning core science instruction. Although the materials provide formative and summative assessments in the Student Textbook, like in the Learn by Doing STEAM Reader, the Assessment section at the back contains questions related to each core concept; however, they do not suggest ways to make instructional decisions based on the assessments. The materials also include an assessment generator that can be used to create a custom assessment of the material and an Assessment Guide, which 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 analyze and interpret the data to support planning instruction, intervention, and extension activities from the data they collect.
- The information gathered from the assessment tools helps teachers plan differentiated instruction. The information gathered from the assessment tools lacks guidance when planning core and differentiated instruction. In the Teacher Program Guide K-8, 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. This limited guidance does not support effective instructional planning targeted to students' needs. Another example in the Teacher Textbook front matter materials provides an Assessment Database section. This section briefly describes the assessment resources but does not explicitly state how to utilize the resources to guide instructional planning.

# TPS Steam into Science Grade 1

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 on how to leverage different activities to respond to student data. Materials include a Teacher Program Guide, Teacher Textbook, and Teacher versions of student books that describe activities and include some overviews and teacher guidance on how all the student materials and activities can be leveraged to respond to student data. Materials also include various student materials that can be used to collect data for teachers to respond to students' instructional needs.
- Materials provide various student resources for teachers to use in responding to performance data. However, they lack teacher guidance on how to leverage activities and respond to the student data. Resources include the Learn By Doing STEAM Activity Reader, the Student Textbook, the Student Journal, the STEAM Activity Guide, the Student Assessment Guide, and the Intervention Focus Tutorial. However, these resources do not guide teachers in effectively using performance data to respond to students' needs. An Assessment Generator is a tool for gathering student data. Teachers use the generator to create assessments based on grade level, TEKS, and learning level. They can choose between multiple-choice or open-ended questions and preview them before finalizing. However, there is no guidance on how teachers respond to the data from these assessments to support students' learning.
- Materials provide various teacher information but provide only some guidance for teachers to leverage different activities to respond to student data. For example, The materials provide various student resources to respond to performance data for Level 2 or Level 3 students. In the Learn by Doing Steam Activity Reader, Chapter 2, students have six activities to explore their learning and practice vocabulary. For example, in Activity 4, "Students will investigate and describe the use of energy in the form of heat in daily activities.". In Activity 6, students will practice and review vocabulary words. However, materials lack guidance on how to leverage activities for students below level.

# TPS Steam into Science Grade 1

## Indicator 6.3

Assessments are clear and easy to understand.

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

## Partial Meets | Score 1/2

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 do not use clear pictures and graphics that are developmentally appropriate. Materials provide some guidance to ensure consistent and accurate administration of assessment tools. Materials include some guidance to offer accommodations for assessment tools that allow students to demonstrate mastery of knowledge and skills aligned 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 contain items for the grade level or course that avoid bias. Formative and summative assessments include assessment 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. For example, summative assessment, Benchmark Test 2, Earth and space item states, "Name 3 ways that humans use water in their everyday lives." In the formative assessments in the Assessment Guide for Earth and Space unit, the open-ended questions avoid bias. For example, one item asks, "What kind of observations can you use to compare how many hours of daylight there are at different times of the year?"
- Assessments contain some items for the grade level that are scientifically accurate. The Assessment Generator, Database 193, Question 64 states, "What type of energy keeps you warm in your house?". The answer choices are heat, electrical, and light. The correct answer, according to the materials, is heat; however, the heat in most homes comes from electricity.
- Assessments contain items for the grade level or course that are not free from errors. For example, the Scientific and Engineering Practices questions contain an error. Question 25 says, "Look at this image. What 2 main parts would you categorize this image into?" There is an empty rectangle below with no image. The Matter and Property questions contain an error. Question number 56 says, "Name 3 parts of a house."

# TPS Steam into Science Grade 1

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

- Assessment tools often use unclear graphics. The items in the Assessment Database use a simplistic clipart to support questions. For example, when asking, "Which thing feels smooth?" materials include unlabeled clipart images of a brick, an unidentifiable object that resembles a screwdriver, and a warped mirror. In another assessment item, the materials state, "Look at the picture. What is the animal doing?" The item includes a clipart image of a large car on the tan ground near the water. The materials do not include an animal in the graphic. In the Assessment Generator, Database ID 208, Question 69, students are to look at the image and decide what happens when the pizza goes in the oven. The choices are “hardens, stays the same, melts.” The confusion is the cheese will melt, and the pizza will become soft. The graphic does not clearly match the question.
- In the Assessment Guide Student Edition, the materials contain few pictures and graphics. The majority of the material is text-based and not developmentally appropriate. Some items use simplistic clipart to support questions. In the lesson on Heating and Cooling, the What Have You Learned? Segment requires students to fill in the missing written word in a table with arrows showing the flow of the water cycle. There are no pictures to support students in the task.
- Some images do not accurately represent real-life objects. For example, in question 185 of the 5C theme, students are asked to order images based on size, but the pictures provided are small and unlabeled, making it difficult to complete the task. Additionally, when printed, the black and white image of the candle may be hard to distinguish, and the antique car may not be recognizable to first graders.
- Computer-generated graphics can only be found in some Assessment Generator choices when creating assessments and in some informal assessments within the learning materials. Materials do not include photographs in these assessments.

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

- Materials provide some guidance to ensure consistent and accurate administration of assessment tools. The “How to Use the Assessment Generator Tool” video walks teachers through creating an assessment with this online tool. It also provides some ways that teachers could use a created assessment with students that include printing or displaying for the group or class to complete. Materials do not include information about how to administer assessments. Materials include reminders or tips that suggest the time allotted to complete some of the assessments. Not all assessments include time allotment suggestions.
- The Teacher Program Guide, Progress Monitoring, includes information about when to assess students. 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. Focus questions are also in the student textbook. Materials state, "Teachers are asked to assign a homework period and have students create a written response to each focus question."
- Materials provide some guidance to ensure consistent and accurate administration of assessment tools. The “How to Use the Assessment Generator Tool” video walks teachers through creating an assessment with this online tool. It also provides some ways that teachers could use a created assessment with students that include printing or displaying for the group or class to complete. Materials do not include information about how to administer assessments.

Materials include reminders or tips that suggest the time allotted to complete some of the assessments. Not all assessments include time allotment suggestions.

- Materials offer assessment administration guidance inconsistently. Items in the database offer directions for multiple audiences without implementation support. For example, item #3 states, "What would you do if you wanted to find out how many daffodils you have in your garden?" while #48 says explicitly, "Work alone. Name the object that provides Earth with light and heat." Another item, #49, tells students to work with a partner. The materials do not provide consistent guidance for students or teachers. The Assessment Database does not include directions or similar guidance in any part of its online assessment platform. The entry screen provides options for teachers to select TEKS-aligned questions, choose the level of questions and show the answers.
- Materials include some information that supports the teacher's understanding of assessment tools and their scoring procedures. For example, the Program Guide states, "Teachers are provided with a teacher assessment matrix where they insert grades for relevant assessments, by TEKS by the student." The assessment matrix includes TEKS 6 - 13 but does not break each one down into all of each standard's parts, such as 6A, 6B, 6C, and 6D. Information includes a description of the TEKS and a table to input student names and scores. There is no place in the matrix to input names of specific assessments or information on scoring procedures for different assessment types, such as performance tasks and Benchmark tests. Materials do not include information on how teachers use the matrix once data is recorded.
- The Teacher Textbook provides a summary of the Assessment Database. The guidance states, "The Creative Science Curriculum encourages two types of assessment: visual lesson plan activities and quizzes/tests." Materials state teachers can conduct visual assessments by "watching students perform activities, such as found in STEM Project Editions or Arts Projects." Materials do not provide any checklists of criteria for scoring or recording visual assessments.

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

- Materials offer some accommodations for assessments so students of all abilities can demonstrate mastery of learning goals. The Assessment Generator allows the teacher to select items above or below grade level that align with the standard. For example, an on-level question asks, " What question might you ask to find out about the plant life cycle?" The below-grade level question is the same but adds multiple-choice options. While materials offer a differentiated assessment option, materials do not include student assessment tools such as speech-to-text for answering written response items, visual clues such as color-coding text within test items, or text-to-speech features that enable students to hear text read aloud.
- Some assessment resources in the materials do not offer accommodations so that students of all abilities can demonstrate mastery of learning goals. The back of the Learn by Doing STEAM Activity Reader contains an assessment section for readers. According to The Teacher Program Guide, those purchasing the print-only format can use the questions included in each Learn by Doing Activity Reader book for assessment. However, the assessment tool doesn't provide any guidance on how to offer accommodations for students to demonstrate mastery of knowledge and skills.
- Materials offer some accommodations for assessments, such as tips for the presentation of questions to aid understanding so that students of all abilities can demonstrate mastery of learning goals in their level of question choices. However, materials do not include teacher guidance on other presentation accommodations like visual cues, color coding, text-to-speech,

or speech-to-text within assessments. Materials do not include guidance for accommodations such as assessment timing, scheduling, or change of setting for assessments to support all students.

# TPS Steam into Science Grade 1

## Indicator 7.1

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

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

## Partial Meets | Score 1/2

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

Materials provide some recommended instruction and activities to scaffold learning for students needing mastery. Materials offer enrichment activities for all levels of learners. Materials partially 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 include some support for students who may not achieve mastery, but teacher guidance needs to be clarified. For example, in the Teacher Textbook, in the lesson on an investigation over How Many Parts Make a Whole?, there is a section with the title Support. "Students may need more practice using building blocks to understand that an object has parts that can be built and taken apart without breaking the whole." Materials suggest using a pizza model to help students understand. In the Teacher Program Guide, there is a reference to an Intervention Focus Tutorial. The tool covers various content in each grade. This guide states that teachers can use it with students who struggle with traditional textbook learning. However, the Intervention Focus Tutorial needs to provide teacher guidance. For example, within the Intervention Focus Tutorial, under TEKS 6, it states, "Your teacher will show you how to create a graphic organizer." The materials include a Support Matrix Document that lists resources that align with each standard. However, the resources listed are not additional and not intentionally designed for intervention."
- Materials include teacher guidance for scaffolding instruction and differentiating activities for students who have yet to achieve mastery. The materials include a Support Matrix Document that lists resources that align with each standard. However, the resources listed are not additional and not intentionally designed for intervention. According to the Teacher Program Guide, "Online libraries offer additional STEM and Arts projects; some are for advanced learners, some are specifically for special education students, but they are all-inclusive, and students with vastly different skill sets will enjoy completing the projects. 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." The Teacher Program Guide details information for teachers. On page 95, bullet 7 states 'How can teachers use TPS resources and teacher guidance to leverage different activities as a response to student results? In simple terms, level 1 learners will require more time and content from STEM and arts projects in conjunction with story books. Level 2 learners will follow the scope and sequence plan and can enjoy additional project work at home or, if time permits, within class. Level 3 learners will follow the scope and sequence and have time to use the advanced learner content shown within the book content and/or use the advanced STEM projects in the online library.' For example, the teacher textbook, page 278 states However, the teacher materials do not explicitly direct teachers to what materials they can use to intervene.

- Materials include some teacher guidance for scaffolding instruction under the Support heading in the Teacher Textbook. In the investigation: Sensing Energy, the Support heading states, "Some students may not yet understand that ice, water, water vapor, and steam are the same substance in different forms. Ensure that your demonstration and explanations are clear enough for them to understand and refer back to their everyday experiences whenever the occasion arises." In the Teacher Textbook, each investigation has separate sections: "Support" for struggling students, "ELL" for language learners, "Extension" for learners that are ready to extend or go beyond the lesson, or "At Home" to continue the learning if desired. For example, the "Name the Scientist" unit includes all these sections. Materials guide teachers in supporting students who still need to meet mastery. In the Teacher Textbook, there is a section that is labeled Scaffolding. The Scaffolding section lists previous and future TEKS. The materials include a Support Matrix Document that lists resources that align with each standard. However, the resources listed are not additional and not intentionally designed for intervention. In the Learn by Doing Scope & Sequence, RTI materials provide recommended targeted instruction and activities for each lesson from the STEAM Storybooks. While it is labeled Alternative Scope and Sequence for RTI students, there is no evidence of an alternative scope and sequence for students who still need to achieve mastery.

Materials provide enrichment activities for all levels of learners.

- Materials provide enrichment activities for all levels of learners that account for learner variability. In the Steam Activity Guide Teacher Edition, the students work in small groups to discuss how people use light, heat, and sound. After students read Amelia Rose Explores, students make a mind map and are encouraged to use newly learned vocabulary words.
- Materials provide Teacher guidance that encourages exploration and application of grade-level science knowledge and skills for all learners by applying new learning via STEAM activities in the STEAM Activity Guide. In the Rock Hard project, students make concrete to help understand how our natural world provides materials for useful products. Students gain experience in observations, measuring, and mixing. They also see how fossils are formed.
- Materials provide Teacher guidance that encourages all learners' exploration and application of grade-level science knowledge and skills by applying new learning via various activities in the Learn By Doing STEAM Activity Reader. In Chapter 4: Who Shut That Door?, students first read about magnets and magnetism. Four activities follow the reading aligned to the content: an experiment to determine which materials are magnetic, a math graphing activity, a drawing activity, a mapping activity, and a vocabulary activity.
- Materials provide a variety of enrichment activities for all levels of learners. In the Teacher Textbook, in the Project Based Lessons in the back of the book, there are enrichment activities

for all levels of learners. Other extensions, like Math extensions, are embedded into the lessons. The STEAM Activity Guide has RLA and Math Connections at the end of the lessons to show how they are embedded. There is evidence of enrichment in the Activity Guide by integrating mathematical practice. The Teacher Textbook offers several opportunities for hands-on investigations and experiments that extend learning. There is an investigation into heating and cooling. The Teacher Textbook has opportunities to connect science to math and literacy at the end of each unit.

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

- Materials provide some scaffolds and guidance for just-in-time learning acceleration for all students. However, some content for “Advanced Students” does not fall within grade-level content expectations. The Teacher’s Textbook Earth and Space Unit, Water Trial Lesson states, "Advancement: Have students research and create graphs to show the number of floods in Florida this century." Again, in the STEAM Activity Guide Earth and Space Unit, there is a Natural Science Activity that states, "This activity is for advanced students only." The Activity has students explore the daylight hours during different seasons. It states, "Ask students: Did you know Earth is tilted as it moves through space? Say to students: Returning to the globe we used earlier, remember that Earth spins on its axis. Look at the picture and notice the tilt. In Earth's history, the tilt is 23.5 degrees off vertical." These advanced concepts go beyond recommended acceleration for this grade level and do not include scaffolds or clear implementation guidance.
- Materials provide some support and resources for students ready to accelerate their learning. Lessons offer support and resources for students ready to accelerate their learning. In the Teacher Textbook, under Advancement, students can create a poster for one resource and provide pictures of four different uses.
- Materials include support and resources for students ready to accelerate their learning; however, materials lack recommendations for just-in-time scaffolds to develop productive perseverance in learning. The materials make suggestions for students needing help in the Teacher Textbook. The Assessment generator has three levels of questioning intended for advanced students. However, there is no evidence of questioning for just-in-time students.

# TPS Steam into Science Grade 1

## Indicator 7.2

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

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

## Partial Meets | Score 1/2

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

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

Evidence includes but is not limited to:

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

- Materials include a variety of instructional approaches that are developmentally appropriate. As seen in the Learn by Doing STEAM Activity Reader, Chapter 2 - Louis's Thirsty Story has teacher demonstrations with the ice cube experiment, real-world connections, and measuring and collecting data. The STEAM Activity Guide has various instructional approaches to engage students. The teacher does classroom demonstrations; there are tasks where students use tools to measure and collect data and engage in collaborative learning activities.
- Materials engage students in the mastery of the content through various developmentally appropriate instructional approaches in the Learn by Doing STEAM Activity Reader. and STEAM Activity Guide. Chapter 9 includes teacher think-aloud in the Idea Boxes. Idea box three states, “Mind map with the class how different animals might be adapted to their environment by their physical structure and relate it to where they live, what they eat, and how they move.” The chapter also includes opportunities to problem-solve with teacher support in Idea Box 1 when it says, "Ask the children what they think happened." The chapter provides exploration with concrete and hands-on materials at the level of rigor for the course when students observe live fish in Activity 5. The STEAM Lesson, What's the Matter, includes opportunities for students to

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

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

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

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

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

- Materials inconsistently support multiple types of practices and lack guidance and structures for effective implementation. For example:
    - The Movement in the Teacher Textbook lesson plan shows teacher modeling, guided practice, and working in groups and independently. But there needs to be guidance and structure in place.
    - The Support Notes for Teachers in the Program Guide detail how the program begins with the STEAM Activity Reader that teaches literacy with science. Then teachers are to use the textbook, including expository text, investigations, assessment materials, and literacy and math-connected challenges. The STEAM Activity Guide provides aligned

STEM and Arts activities and an engineering practice project. The Support Notes for Teachers in the Program Guide provides an overview of each program piece, what is in each piece, and the sequence of materials. However, the teacher materials do not specify how the program supports modeled, guided, and collaborative practice.

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

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

- Materials represent diversity in communities. The STEAM Activity Guide, the student edition, has a diverse representation through images and information. Throughout the Amelia Rose stories, there are males and females. There are different races.
- Materials represent diverse communities using images and information that are respectful and inclusive. The illustrations of the Learn By Doing STEAM Activity Reader represent diverse communities. Chapter 4: Who Shut the Door? shows an image of a diverse class. The cartoon students have multiple skin colors and genders, and one is in a wheelchair. The cartoon teacher is a male with tan skin. The same characters are found in the reader's stories, as well. A diverse group of students that represent multiple ethnicities is on the cover of the Learn by Doing Steam Activity Reader.
- Materials represent diverse communities using images and information that are respectful and inclusive. In the Online Library - Scientists - Blackline Master K-8, there is a chart with named scientists and their ethnicity. For example, the materials list Dr. Helen Rodriguez Trias under the header Latinos. There is a note to use this list to assign research to students. The Online Library of Scientists contains fact sheets for many scientists from diverse backgrounds, including males, females, and multiple nationalities and ethnicities. Scientists include Alexander Graham Bell, Ernest Just, Isaac Newton, Jane Goodall, Katherine Johnson, Mae Jemison, Marie Daley, Mario Molina, Sally Ride, and Ynes Mexia.

# TPS Steam into Science Grade 1

## Indicator 7.3

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

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

## Partial Meets | Score 1/2

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

Materials include some guidance for linguistic accommodations (communicated, sequenced, and scaffolded) but not commensurate with various English language proficiency levels as defined by the ELPS. Materials do not 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 provide some linguistic accommodations for emergent bilingual students that do not commensurate with various levels of English language proficiency as defined by the ELPS. The Learn By Doing STEAM Activity Reader includes some directions for teachers on how to guide students through listening, speaking, reading, and writing activities designed to support all students. However, they need to be accommodated for emergent bilingual students or commensurate with various levels of English language proficiency as defined by the ELPS. For example, within each chapter, materials provide idea boxes for class discussion of an element or concept from a text to encourage speaking, such as in Chapter 2, where Idea Box 2 says, "Ask the children what they think had happened to Louis's water.".Some materials meant for English language learners lack clear labeling of accommodations.
- The Teacher Textbook contains some suggestions for students learning English. In some lessons, the materials label accommodation guidance as "ELL." In the Matter and Energy Investigation, there are three suggestions under ELL, including "Ensure students understand the meanings of each category you have created in the investigation. Offer help with writing the name of objects they find where necessary." Teacher guidance in some lessons under the "Support" heading. For example, the Earth and Space: Four Seasons investigation states, "During reading, ensure students are developing their basic sight vocabulary and able to comprehend English vocabulary and language structures routinely found in written classroom materials" under the Support heading. In some lessons, there is no label; teacher guidance only includes a sentence or paragraph that is part of the teacher's instructions. For example, the Name the Scientist

Investigation includes this statement in the teacher guidance, "Encourage students to use their prior knowledge and experiences to understand meanings in English." However, these do not appear consistently and need to include information showing alignment with the various levels of English language proficiency as defined by the ELPS.

- The Teacher Program Guide provides limited guidance for teachers to support emergent bilingual students. Teachers are asked to use Archway, a phonics program, and dual language TPS glossary cards. The Teacher Program Guide also provides a list of the ELPS. However, further linguistic accommodations with detailed teacher guidance are not embedded anywhere else in the materials.
- Materials include some guidance for linguistic accommodations but do not guide various levels of ELPS. The Teacher Textbook, Chapter - Scientists, section ELL, states, "Ensure that students understand the adjectives you use to describe scientists. Have students think about words they can use to describe different scientists." This section does not reference the different levels of English proficiency or provide teacher guidance to support students with varying levels of English proficiency.

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

- Materials include few opportunities of use of students' first language but do not support English's linguistic, affective, cognitive, or academic development. For example, the Name the Scientist Investigation states, "Encourage students to use their prior knowledge and experiences to understand meanings in English." This guidance is in the teacher's instructions under the discussion. Also, in the Teacher Textbook Matter and Energy investigation, under the ELL heading, it states, "Encourage students to use their prior knowledge and experiences to understand meanings in English." However, these limited experiences do not show encouragement of strategic use of the students' first language and do not include detailed support for linguistic, affective, cognitive, and academic development of English.
- Materials do not encourage strategically using the student's first language. Materials provide teacher guidance and some opportunities for the teachers to use Spanish glossary cards. For example, instructions state, "Use the Spanish Glossary cards to assist relevant students." However, strategic teacher guidance, such as opportunities for structured and unstructured speaking in the native language, are not included, and the cards do not have Spanish-to-English representations of vocabulary to encourage collaboration in dual languages.
- Materials do not acknowledge using students' first language to support academic development in English. The materials do not encourage strategically using existing language skills. For example, in the Teacher Textbook, Water Trial! In the lesson Plan, students will understand that water is a vital natural resource but also brings danger. The materials provide general linguistic support, such as showing pictures as stated in these directions: "Show pictures of a pond with and without a fence and determine why a fence is used to keep people safe. Show a picture of a life preserver and identify why it is important to have around all bodies of water, especially around swimming pools." However, no teacher guidance acknowledges using native language in discussion with this lesson that could assist students in comprehension.
- Materials do not encourage strategically using the student's first language in the textbook, activity guides, and reader book teacher materials, but only some references appear in other support materials. For example, in the STEAM Arts Project Guide K-12, Grade 1, Building Like an Egyptian, teacher guidance under Tips for ELL Students states, "When the students are describing what they have done to create their mixtures and their pyramids, they may have

trouble putting it into English. If this does happen, have some spare materials handy so that when you get them to describe it to you, they can gesture to the materials that they are talking about." The materials primarily provide general linguistic support but do not encourage strategically using existing language skills in teacher guidance across all materials.

# TPS Steam into Science Grade 1

## Indicator 7.4

Materials guide fostering connections between home and school.

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

## Partial Meets | Score 1/2

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

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

Evidence includes but is not limited to:

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

- The materials provide information for students and caregivers in the Family Guide. The materials offer a Family/Caregiver Program Guide for grades K-8 that introduces the philosophy, research-based strategies, program components, assessment information, and a glossary for each grade.
- Materials provide information to be shared with students and caregivers about the program's design. According to the Family/Caregiver Guide, Program Introduction, the program has created a family guide that explains the research behind the program content. The Family/Caregiver Program Guide describes the program's philosophy in easy-to-understand language. The Program Introduction describes how the program uses research-based strategies. “Students must be presented with lessons that require full cognitive involvement for all learners and attack all ways of learning in terms of kinesthetic, visual, and auditory approaches.” The materials include reference to research that back the involvement of kinesthetic learning. Research states, "Learning increases by 15% by having someone walk or move.”
- The Teacher Textbook provides an overview of the Family/Caregiver Guide For Teachers/Parents/Caregivers. This resource guides teachers on how to share information about the curriculum with families and caregivers. It also mentions how teachers can share the TPS glossaries with families. It states,” These are available to parents/caregivers digitally.” It also references other resources that can be shared, for example, “At Home, activities are also provided in each Student Textbook.”
- The Family/Caregiver Program Guide is a resource that explains the program to guardians. Additionally, materials provide the resource titled “How Teachers and Caregivers are Supported by the STEAM” to inform caregivers on how they can help reinforce student learning and development. According to the introductory section of Family/Caregiver Guide Grades K-8, "TPS

Publishing, Inc. provides parent digital access for families to all homework assignments and the lists of keywords and definitions."

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

- Materials provide information for teachers to share with families/caregivers to help reinforce student learning and development. The Family/Caregiver Program Guide provides some resources and strategies for caregivers to reinforce student learning and development. It states, "Parents/caregivers can help enforce some of the requirements of the TEKS at home. The work you can complete with their children will vary between assisting students studying new TEKS content and explaining how it applies to home life and practical assistance with safety measures."
- The materials provide information for parents and caregivers about ways they can reinforce learning and development. For example, the materials include a document titled How Teachers and Caregivers are Supported by STEAM Content.and provides introductory information for caregivers as well as concrete ways caregivers can support learning at home. For example, it provides the strategy of "Ask the students to define specific words and demonstrate them with an action or an example in a sentence."
- Materials provide information for teachers to share with families/caregivers to help reinforce student learning and development. TPS has created an additional guide, "How Teachers and Caregivers are Supported by the STEAM," to be shared with caregivers for how they can help reinforce student learning and development. The Teacher Textbook lessons include an "At Home" section with specific suggestions for home reinforcement. In the Force, Motion, and Energy Lesson, it states, "At Home: Play with toy vehicles with your child, encouraging them to describe how they are moving using words such as in a straight line, zigzag, up and down, back and forth round and round, fast and slow."
- Materials provide some digital resources that teachers can share with families to reinforce learning and development. According to the Family/Caregiver Guide Grades K-8, in the Program Introduction, "TPS Publishing Inc. provides parent digital access for families to all homework assignments and the lists of keywords and definitions."

## Materials include information to guide teacher communications with caregivers.

- The Teacher Program Guide contains information about the resources available to caregivers but does not guide teacher communications with caregivers. The materials tell the teacher what is available and state that TPS provides the caregivers with access online and glossaries in the Family guide. The document also states that materials advise teachers to provide digital access to caregivers and that the Family Guide states how caregivers might communicate with teachers. However, materials lack information to guide teacher communications with caregivers.

# TPS Steam into Science Grade 1

## Indicator 8.1

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

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

## Partial Meets | Score 1/2

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

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

Evidence includes but is not limited to:

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

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

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

- Materials provide some teacher guidance for facilitating student-made connections with prior experience and background knowledge across core concepts, scientific and engineering practices, and recurring themes and concepts. Materials include TEKS 1 –5 Content Guide, which shows how recurring themes and concepts are spiraled throughout different lessons. For

example, TEKS 5B is taught in Lessons 10B, 9A, 9B, 8A, and 8B, according to the added document. For example, the Water lesson states, "This standard builds upon work students have covered on this topic in previous grades. Students should already know: Grade: Kindergarten: how to observe and describe the physical properties of natural water sources. Grade 1: how to identify and describe a variety of natural sources of water, including streams, lakes, and oceans, and how to gather evidence of how rocks, soil, and water help to make useful products."

- The materials include an "Essential Content Guide" in the *Learn by Doing STEAM Activity Reader Book Teacher Edition*. This guide contains the chapter information and the content taught across science, math, and English language arts. For example, chapter 8 addresses the basic needs of plants and how they depend on other living and nonliving things. During this lesson, place value and design are taught.
- Materials include some guidance on recurring concepts. In the *Teacher Textbook*, a Scaffolding Overview tells the teacher what the students should have previously learned and how to activate prior knowledge. For example, it states that teachers can use questions from the assessment generator to review kindergarten content. The standards that align in grades two through five are listed for knowledge of the future study.
- Materials provide some guidance in recurring concepts in the scope and sequence and the pacing/year planning; both offer units for science concepts, for example, "Scientific and Engineering Practices," "Matter and Energy," and "Force, Motion, and Energy." These are all stand-alone units; they do not show recurring themes within the grade level.

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

- While materials include some practice of knowledge and skills, particularly in student materials, there is limited evidence of spiraling previously taught content throughout the year to support mastery and retention. The Pacing Calendar/Year Planner specifies dates for "revision, assessment, and reteach" after each unit. Neither the Scope and Sequence nor Pacing Calendar references spiraled TEKS for review or core concepts for reteaching.
- Materials provide review and practice opportunities in the Learn by Doing STEAM Activity Reader Book to support mastery and retention. For example, in Chapter 1, Mee's Birthday Lunch, six different activities promote mastery and retention of the content. Materials lack clear spiraling of previous TEKS in later lessons.
- Materials include project-based lessons incorporating multiple standards within an investigation for review and practice. For example, the Heating and Cooling Lesson includes two different investigations called "Ice and Steam" and "Jar of Hot Water." While these project-based lessons allow for some review and practice, materials lack intentional and detailed spiraling to support mastery and retention.
- Materials include some review and practice in the *Student Textbook,* including focus questions that incorporate content from the lessons. For example, the Earth and Space unit asks: "Where is air? How do you know that air is there? What is wind? How do you know that wind is there? What can wind do?" However, materials do not provide spiraled review and practice throughout the year.

# TPS Steam into Science Grade 1

## Indicator 8.2

Materials include classroom implementation support for teachers and administrators.

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

## Meets | Score 2/2

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

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

Evidence includes but is not limited to:

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

- The materials include a Teacher Program Guide to introduce the program, describe program components and online materials, provide an online navigation guide, provide support notes for teachers, describe the pedagogy, Texas Essential Knowledge and Skills (TEKS), Limited English Proficiency Standards (LEPS), and describe the engineering design process of Define, Assess, Plan, Implement and Communication (DAPIC).
- The materials are organized to facilitate ease of implementation and use. The *Teacher Textbook* contains an overview of the components, similar to the Teacher Program Guide. When the lessons begin, an overview guide lists the TEKS taught, scaffolding information, objective, and misconceptions. Next, the lesson plan lays out the time that will be required, the materials needed, and the time estimation for each activity.
- The materials include a *Learn by Doing STEAM Activity Reader Grade 1 Teacher Edition*. This book provides reading guidance, comprehension skills, and support for creating and editing drafts. It also includes teacher guidance for activities, vocabulary, the scientific method systems, the design engineering process, and safety in the classroom.

- The materials include an Online Library – Interactive Assessment Software Tool. The assessment Generator offers assessments to be created online to support planning scaffolds of instruction and enhance student learning.

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

- The materials include standards correlations and cross-content connections. For example, the *STEAM Activity Guide Teacher Edition* incorporates science with technology, engineering, art, and math cross-content connections. Each activity lists the science standards aligned to that lesson. However, it does not list the reading or math standards. In “Amelia Rose Explores” lists the science standard 1.6B. There are no math or reading standards named. The “Word Wall Activities” list the science standards aligned to that lesson. It also details the ELA/literacy and mathematics connections but does not identify the aligned reading or math standards. In “Kevin Loves Soccer” it lists science standard 1.7B. The materials also list three ELA/literacy connections and three mathematics connections, but the specific TEKS are not identified. In the *Teacher Textbook*, the TEKS for that lesson is listed on the top of each page. For Example, in the lesson “Properties,” the only TEKS listed is 6. A at the top of the page from pages 58–66.
- The materials include science standards correlations for lesson units, lessons, and activities. The Scope and Sequence Kindergarten consists of the unit, TEKS, and a textbook reference of where those can be found. They do not include standards for the math and literacy activities included in the lessons.
- The materials include an Essential Content Guide in the *Learn by Doing STEAM Activity Reader Book Teacher Edition* that has cross-content connections for ELA, Math, and Social Studies without specific standards listed. This guide contains the chapter information and the content taught across science, math, and English language arts. For example, chapter 8 addresses the basic needs of plants and how they depend on other living and nonliving things. During this lesson, place value and design are taught.

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

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

# TPS Steam into Science Grade 1

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

- Materials include guidance for safety practices. For example, in the *Scientific, Investigation and Reasoning Handbook – Grade 1*, the first lesson is titled "Working Safely and Responsibly," which reviews how to behave safely in science lessons. The *Learn By Doing STEAM Activity Reader Book Grade 1 Teacher Edition* includes a section titled "Safety in the Classroom." It directs teachers to follow state and school safety guidelines
- In the Learn By Doing STEAM Activity Reader Book Grade 1 Teacher Edition, there is a paragraph about safety on page 11. It is a general reminder to demonstrate safety practices as described by TEA and to follow school and district guidelines before conducting any investigation.

# TPS Steam into Science Grade 1

## Indicator 8.3

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

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

## Meets | Score 2/2

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

Materials support scheduling considerations and include guidance and recommendations on required time for lessons and activities. Materials guide strategic implementation without disrupting the sequence of content that must be taught in a specific order following a developmental progression. Materials designated for the course are not flexible but can be completed in one school year.

Evidence includes but is not limited to:

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

- Materials include support for scheduling considerations, guidance, and recommendations on required time for lessons and activities. For example, the Texas Proclamation 24 Scope and Sequence provides minute suggestions for lessons and class period suggestions. This information is available in the online resources. In the Online Library, the Teacher Support Learn By Doing Scope and Sequence RTI Grade 1 states that it provides an “alternate scope and sequence for RTI students.” Within this document, there is a “recommended duration of lesson/minutes.”
- The materials provide guidance and recommendations on the required time for lessons and activities. The Teacher Resource Guide includes a Pacing Plan/Year Plan. The guide only suggests what days to teach the units. The *Teacher Textbook* has a Scope and Sequence and a pacing calendar available. It also contains the recommended length of time for each lesson. The pacing calendar takes into account holidays and potential teacher work days.
- Materials include pacing suggestions for the grade level. For example, in the *Teacher Textbook,* pg. 60, there is guidance for the number of class periods required, time, and how many lessons are needed for reteaching and revision.

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

- Materials guide strategic implementation. For example, the Learn by Doing STEAM Activity Reader Teacher Edition contains an essential content guide. The guide shows that the material begins with Unit 1, “Mee’s Birthday Lunch,” in which students learn about matter and

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

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

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

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

# TPS Steam into Science Grade 1

## Indicator 9.1

### Indicator 9.1, Grade 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. | No |

### Not Scored

The visual design of materials is 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 do not 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 a design that supports and does not distract from learning. Chapters organize the STEAM Learn By Doing Activity Reader Student Edition. However, the chapter name does not always identify the topic, and the topic is not identified elsewhere. For example, Chapter 1 is titled Mee's Birthday Lunch, and Chapter 2 is titled Louis' Thirsty Story.
- The Student Textbook contains a clear topic heading and a predictable sequence of material that repeats in each chapter. The Animal Bodies section starts with The Science, then Key Words, then an Investigation, followed by What Have You Learned and Test Yourself. However, the chapters are not clearly labeled. The table of contents gives the lesson name Tools on page 1. The heading listed on page 1 is Name That Tool. This could be confusing to students and parents when looking for important information.
- The Teacher Textbook, Grade 1, has a digital table of contents. However, the contents are listed by TEK. For example, 4A, B - TRAD - Scientific and Engineering practices are not designed in a way for teachers to locate information easily. Pages 28-45 are found in this chapter; a teacher must review all the pages to find important information.

# TPS Steam into Science Grade 1

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

- Materials do not embed age-appropriate pictures and graphics that support student learning and engagement without being visually distracting. The Student Textbook uses many small clipart icons but lacks real-life photographs to enhance student learning. For example, the textbook presents opaque and transparent objects within a lesson, but the accompanying pictures are not labeled to distinguish between the two. In the Parent and Young section, materials show a clipart picture of a horse and a smaller horse for students to compare parent and young. The student textbook provides images of erosion used to make connections between water and land—however, no authentic photographs allow the students to have a factual visual representation.
- The STEAM Activity Guide has few pictures or graphics supporting student learning and engagement. There are only a few pictures in the Amelia Rose Explores - Matter and its Properties chapter. Some pages do not have images or illustrations to support student learning.
- In the STEAM Learn By Doing Activity Reader Student Edition, materials use clipart graphics–not photographs, to support student learning. Students do not see scientific representations. For example, in the assessment section, students are identifying living things. The items pictured are all clipart: a lion, rocks, a water drop, a butterfly, a cartoon person, and a one-color leaf coming out of something green.

## Materials include digital components that are free of technical errors.

- Materials do not include digital components that are free of technical errors. For example, the assessment generator for grade 1 TEKS 10.D had the following grammatical error, "If it was snowing, what would you expect the temperature to be like?".
- The STEAM Lean By Doing Student Edition has a thermometer labeled Fahrenheit. The measurements on the thermometer include; "37F° Heat Wave, 32F° Very Hot, 26F° Hot, 22F° Room" and "0F° Water Freeze." The descriptions of temperatures describe Celcius measures, not Fahrenheit.

# TPS Steam into Science Grade 1

## Indicator 9.2

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

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

## Not Scored

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

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

Evidence includes but is not limited to:

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

- Materials do not integrate technology and tools that support student learning. Although the materials include online assessments in the Interactive Assessment Tool, materials do not integrate digital technology and tools that support student learning and engagement. The materials do not include opportunities for learning through video and audio clips, web links, photos, games, simulations, or data sets.
- The online platform contains a Texas Proclamation 24 Science - Grade 1 Tools section. It is a series of photographs and illustrations, such as a photograph of foil, an illustration of a frog's life cycle, and a photograph of an aquarium.
- The program provides a Reader Activity Library and an Assessment Generator. Materials also include information that states students have the ability to take assessments online. However, reviewers are unable to review this component.

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

- Although the materials include online assessments in the Interactive Assessment Tool, they do not integrate digital technology to support student engagement with the science and

engineering practices, recurring themes and concepts, and grade-level content. Materials do not include interactive resources for instruction, such as videos or interactive labs.

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

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

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

- Materials do not integrate digital technology that is compatible with a variety of learning management systems. Materials do not indicate which operating systems they are compatible with. However, the online materials are accessible via a computer and a mobile device.

# TPS Steam into Science Grade 1

## Indicator 9.3

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

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

## Not Scored

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

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

Evidence includes but is not limited to:

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

- Digital technology and online components are not developmentally appropriate for grade 1 students. Materials use terminology that is not developmentally appropriate. Most questions from the Assessment Generator are open-ended responses students must write to answer, such as, “What would we use to understand how a frog develops?” and, “The teacher has taken the class outside to observe the sky. She has asked them to wear sunglasses. Why?” Materials do not provide students with sentence starters or guidance on how students should respond. Multiple choice assessment items include language and text that is beyond most grade 1 students’ reading abilities. For example, a question in Database 98 states, “In the engineering design process, what is it you’re testing initially? a) the final design, b) the prototype, c) a sample.” The terms *initially* and *prototype*, paired with advanced grammar and sentence structure is developmentally inappropriate for grade 1 readers.
- The only digital technology and online components included for students are Online Libraries of print-based content and resource materials. Libraries included are Assessment Tools, Reader Activity Books, Student Reasoning Library, Blackline Master Library, STEAM Library, and the Digital Frog Library. There is an interactive assessment tool but no other interactive and primary components. For example, STEAM Activity Reader Book Student Edition Online version, Chapter 5, My Train Stopped at Platform 2, includes texts for students to read that are beyond most grade 1 students’ reading ability, such as, “Rosa told them that the journey had taken them five

hours, but they had seen massive, snow-capped mountains and lakes on their way." Materials do not provide a developmentally appropriate text-to-speech feature for grade 1 students.

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

- Materials do not provide teacher guidance for the use of embedded technology. For example, materials provide a Crosscutting Library of photographs. The photograph library includes general topics like systems and models, weather protection, and trees. When each topic is selected, the teacher is directed to a Google Photos page of those images. The "trees" link takes you to a page with a collection of 47 trees on the Google Photos link. However, materials do not provide teacher guidance for embedding the online photo library within lessons and assessments to enhance student learning.
- Materials provide a video for teacher guidance on the interactive software tool and the assessment generator. Materials do not provide additional videos for resources such as the intervention focus tutorial. Materials do not include step-by-step instructions for setting up and using technology.

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

- Materials do not provide parent and caregiver resources for supporting student engagement with digital and online components. Materials state, "TPS Publishing Inc. provides parent digital access to family to families for all homework assignments, and to the list of keywords and definitions." Materials state that the Family/Caregiver Guide provides guidance for parents and caregivers about how to use digital materials. However, the Navigation Guide is designed for teachers, not families. The Navigation Guide shows how teachers can access the textbooks, Assessment Database, Interactive Assessment Tool, and Intervention Focus Tutorial. The Family and Caregiver Guide includes information about how to navigate textbooks and the Assessment Generator. The guide does not include how to support student engagement with digital technology.
- According to the Teacher Program Guide, TPS provides caregivers with digital access to homework materials, TEKS and ELPS information on assignments to share and discuss with students, and access to TPS glossary cards, which caregivers can review with students. Materials lack teacher guidance in setting up digital access to caregivers.