Kiddom OpenSciEd Grade 6

Kiddom OpenSciEd Grade 6 Executive Summary

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

Grade	TEKS Student %	TEKS Teacher %	ELPS Student %	ELPS Teacher %
Grade 6	81.63%	81.63%	100%	100%
Grade 7	78.85%	78.85%	100%	100%
Grade 8	83.67%	83.67%	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 the learning in phenomena and problems as the key lever for driving learning and student mastery of disciplinary knowledge and skills.

Section 3. Knowledge Coherence

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

Section 4. Productive Struggle

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

Section 6. Progress Monitoring

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

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- The assessments are clear and easy to understand.

Section 7. Supports for All Learners

- The materials provide guidance on fostering connections between home and school.
- The materials include listening, reading, writing, and speaking supports to help Emergent Bilinguals meet grade-level science content expectations.
- The materials include a variety of research-based instructional methods that appeal to a variety of learning interests and needs.
- The materials include 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 clear and easy to understand.
- The materials are intentionally designed to engage and support student learning with the integration of digital technology.
- The digital technology or online components are developmentally and grade-level appropriate and provide support for learning.

Section 10. Additional Information

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

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Indicator 2.1

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

1	Materials provide multiple opportunities for students to develop, practice, and demonstrate mastery of grade-level appropriate scientific and engineering practices as outlined in the TEKS.	M
2	Materials provide multiple opportunities to make connections between and within overarching concepts using the recurring themes.	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 designed to strategically and systematically integrate scientific and engineering practices, recurring themes and concepts, and grade-level content as outlined in the TEKS.

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

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.

- Each lesson begins with a section labeled "This Lesson," which goes over the investigations and hands-on activities that will take place to answer the investigative question using science and engineering practices.
- TEKS 6.1A states that "students are expected to ask questions and define problems based on observations or information from text, phenomena, models, or investigations." The materials provide multiple opportunities for students to master content and engineering skills under 6.1, such as:
    - In Unit 6, "Exploring the Tsunami Phenomenon," students make observations and formulate questions after viewing a video and reading a text.

    - In Unit 6, Lesson 12, students plan and carry out an investigation to determine what variables affect the amount of lift produced in a fluid.
    - In Unit 6.3, Lesson 1, "Weather, Climate and & Water Cycling," there is a section called "What Students Will Do," which combines the TEKS with Science and Engineering Practices. It explains what the students will be doing at different points of the lesson: developing a model, asking questions, and carrying out an investigation, to give students multiple opportunities to practice and develop mastery of the content standards.
- Materials include opportunities for students to refine a model or explanations using models. In the 6.2 lesson, students observe current cup systems and the heat transfer process to conclude how these cup systems were designed. Students then build upon their data collection and analysis to design a model of a cup that would maintain heat transfer to keep liquids cooler.

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

- Grade 6 materials use the recurring theme of patterns. Within Unit 6.3, students analyze and interpret sets of data to identify patterns and spatial patterns. Students plan an investigation to determine if a pattern exists and carry out investigations to collect data about patterns.
- The student expectation in TEKS 6.5A to "Identify and apply patterns to understand and connect scientific phenomena or to design solutions" builds on the TEKS in the previous grade to "model and identify how changes to Earth's surface by wind, water, or ice result in the formation of landforms." This theme recurs in Unit 7, Lesson 1, where students are asked to develop a model to explain what happened to different mountains to cause them to change in elevation.
- In Unit 7, Lesson 2, students are asked to observe the night sky and identify patterns. This concept builds on the student expectation from fifth grade, which states, "recognizes patterns among the Sun, Earth, and Moon system and their effects." This theme recurs in seventh grade, as TEKS 7.5A states that students will "identify and apply patterns to understand and connect scientific phenomena or to design solutions."
- Materials include opportunities for students to refine a model or explanations using models. In the 6.2 lesson, students observe current cup systems and the heat transfer process to conclude how these cup systems were designed. Students then build upon their data collection and analysis to design a model of a cup that would maintain heat transfer to keep liquids colder.
- The materials provide multiple opportunities to show mastery of grade-level appropriate scientific and engineering practices. For example, materials include opportunities for students to ask questions that can be answered using evidence from investigations or gathered by others. In Lesson 6.5.9, students look back at the related phenomena and apply gained knowledge to a new question about natural hazards.

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

- Materials in the teacher guide for grades 6–8 build on prior unit content so students make deeper connections with topics throughout the year.
- The materials are designed to develop and build student skills and content knowledge using phenomena appropriate to the grade level as outlined in the TEKS. For example, materials for grades 6–8 use teacher support with the storyline and driving question board (DQB). The units are further organized into lessons with anchoring phenomena and time-stamped parts of the

lesson. Each one develops concepts by reading, writing, hands-on labs, and math connections. These conclude with a review and assessment.

- Students' prior ideas and understandings are elicited and built upon. Students and teachers work together to figure out where to go next, what evidence is needed, and how it will help them answer questions about a larger phenomenon or solve a problem. Students engage in science and engineering practices in meaningful ways in order to make progress on their questions.
    - The student expectation in fifth grade, according to TEKS (5.8C), is to demonstrate and explain how light travels in a straight line and can be reflected, refracted, or absorbed. Grade 6, Unit 1, Lesson 1 asks students to consider how something can act like a mirror and a window at the same time.
    - In Unit 3, Lesson 2, Grade 6 students use weather data to analyze conditions in the atmosphere. This builds on fifth-grade knowledge that weather is the daily variation in the atmosphere's condition on a local scale.

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.

- Students are provided opportunities to engage with scientific and engineering practices multiple times and in multiple contexts with DQB and anchoring phenomena.
- Students are given multiple opportunities to ask questions, plan and conduct investigations to answer questions, and explain phenomena using appropriate tools and models. For example, students make connections across disciplines through reading, writing, and math skills.
- In Unit 6.3, Lesson 1, "What causes this kind of precipitation event to occur?," students observe video clips of hail falling in different areas of the United States on different days and develop a model to try and explain the causes. They develop questions for the DQB about mechanisms that cause different kinds of precipitation events. Students are asked to consider, "What are some patterns you noticed as you examined the hailstone images?" and "What new ideas and questions do you have about how hailstones are produced?" Finally, students end this lesson by brainstorming investigations they could do and sources of data that could help them figure out the answers to the questions.
- In Unit 6.3, Lesson 4, "Why is the air near the ground warmer than the air higher up?," students plan and carry out an investigation to figure out what causes the air above ground surfaces to be warmer than the air higher in the atmosphere. Students measure the temperature of the air at different ground surfaces, the air temperature above those surfaces, and the amount of sunlight reaching and reflecting off those surfaces.
- According to the *Teacher Handbook*, units integrate mathematical understanding and practices that are grade-level appropriate across both math and science standards. Guidance on mathematical knowledge and practices is provided in the Teacher Background Knowledge for each unit to alert teachers to opportunities to emphasize the connections.

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Indicator 2.2

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

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

Meets | Score 4/4

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

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 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.

- The materials use phenomena as a central anchor that drives student learning across grade-level content in each discipline (earth/space, life, physical science). These anchoring phenomena are used to draw students into the storyline by presenting the natural challenge of explaining something or solving a problem. Students examine phenomena using science and engineering practices (SEPs) through the lens of recurring themes. Students develop content knowledge as they work to construct explanations of the phenomena and/or solve engineering problems. For example:
    - In Unit 6.4, Lesson 1, students are introduced to a headline claiming that Mt. Everest is growing. They must find where Mt. Everest is located on the world map. Students develop a model to try and explain what causes this to occur and develop questions for the Driving Question Board (DQB) about mechanisms that cause changes in elevation.
    - In Unit 6.1, Lesson 1, "What causes this kind of precipitation event to occur?", the anchoring phenomena begins with students observing three videos of hail falling in different areas of the United States on different days. Students develop a model to try

and explain what causes this to occur and develop questions for the DQB about mechanisms that cause different kinds of precipitation events.

- Every 6–8th-grade Unit Storyline is a journey to figuring out a phenomenon that defies easy explanation. It could be a phenomenon that students need to understand to address a problem, such as predicting and preparing for a violent storm. It might be a phenomenon they want to know how to control, like soil erosion on a farm, or an everyday phenomenon that mystifies students when they stop to think about it, like why droplets of water spontaneously appear on the outside of a glass of cold water.
- In grades 6–8, materials embed opportunities for students to investigate phenomena and problems before, during, and after lessons as they construct, build, and develop their knowledge of the grade-level content. For example, in grade 6, students investigate why clouds are not visible everywhere. Students use prior knowledge of the water cycle and make connections with cloud formations.

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

- The materials allow for a variety of learning opportunities for phenomena and/or solving problems. Materials use an organized lesson plan system that allows students to experience the phenomena through various means, such as teacher demonstrations, hands-on experiences, videos, text, data, and images. For example, in grade 6, students determine how certain materials allow for heat transfer at a faster rate. They must develop and test their model by knowing the experiences of the components of heat transfer.
- In grade 6, students build on what they know about matter from fifth grade to develop a particle model of solids, liquids, and gasses that includes both structure and movement of particles as it relates to the temperature of the substance.
- In grade 6, students reflect on activities they do with their bodies and a time when something happened inside their body that prevented them from doing those activities. Students then obtain information from doctors' notes and images about an injury and recovery of a middle school student in their unit on Cells and Systems.
- Each unit builds on prior work on SEPs or crosscutting concepts (CCCs) begun in earlier units. For example, students refer to and use how they trace matter and energy through a system, starting in 6.2 and several times in later units (e.g., 6.3, 6.4, 7.3).
- In Unit 4, Lesson 12, after recalling what they already know about erosion and weathering, students read about erosion rates and how scientists use these rates to determine how erosion is changing the surface of mountains. Then, using both the erosion rates and uplift rates for Mt. Everest and Mt. Mitchell, they develop a representation of each model and how these two processes are affecting them.
- Students share cell phone damage data from a news article to elicit student experiences. Some students reenact some phone-breaking scenarios. In Unit 8.1, Lesson 1, "What happens when two things hit each other?", students' work is anchored in meaningful phenomena or problems that motivate building ideas over time.

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

- There is a Teacher Background Knowledge section that provides the anchoring phenomenon and why it was chosen for the unit. It also provides the SEPs and focuses that are used in the unit.
- There is a Unit Overview that outlines for the teacher “what students will figure out” and include the goals and scientific concepts behind the phenomenon and engineering problems in the unit. This outline is a bulleted list of key concepts that students should understand by the end of the lesson. Each lesson plan details what students will do and why, outlines a plan for instruction, outcomes to look for, and future lesson goals. The teacher edition describes the lesson procedures and instructional strategies, including key ideas for teachers to emphasize in each lesson.
- Materials give guidance to teachers regarding the scientific concepts and objectives underlying each phenomenon and engineering problem that correspond to content concepts across the grade level. Materials provide opportunities for students to build an understanding of grade-level content through unit-level or chapter-level phenomena or problems.

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Indicator 3.1

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

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

Meets | Score 6/6

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

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

Evidence includes but is not limited to:

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

- In the Teacher Background Knowledge for Unit 6.9, “Where does this unit fall within the OpenSciEd Scope and Sequence” provides information about what this unit is designed to be taught after/before, what Performance Expectations the Unit focuses on, and how the units build across multiple units. The section “What additional ideas will my students have or know from earlier grades or OpenSciEd units?” informs about what prior knowledge from fifth-grade units and what content they will be building and connecting new knowledge across the units in sixth grade.
- Materials are designed to build student knowledge. For example, by the end of Lesson 8 in Unit 3, students should have a good understanding of what clouds are made of. This knowledge lays the foundation for the concepts developed in Lessons 10–12, which include understanding how convection currents develop in the atmosphere and explaining their role in creating different types of precipitation, including hailstones.
- Materials are designed to connect student knowledge. For example, the Teacher Background Knowledge document in Unit 9 states that the unit is designed to be taught prior to OpenSciEd Unit 7.6, which focuses on natural water resources, changing precipitation and climate, and human impacts. The document also provides teachers with additional ideas students might have or know from earlier grades or units.

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

- Materials present content in a way that builds in complexity within and across units and grade levels. In grades 6–8, materials use the science and engineering practices (SEPs) through each unit with hands-on labs that include questioning, building models, and applying them to real-world situations. For example, grades 6–8 use the topic of forces throughout the units and vertically.
- Materials sequence in a way that activates or builds prior knowledge before explicit teaching occurs that allows for increasingly deeper conceptual understanding. For example, in grade 6, materials utilize a Unit Overview for each unit. In Unit 6.8, students consider situations in which they have seen their phones break. They contrast these situations with others where something else collided with another object and either did break or did not. This knowledge drives the work for the first units to plan and carry out investigations and analyze data.
- In Unit 6.9, Ecosystem Dynamics & Biodiversity, students spend the first lesson learning that palm oil is derived from palm trees that grow near the equator and that these trees are both land-efficient and provide a stable income for farmers. Students establish the need for a better design for palm oil farms to support both orangutans and farmers. This design serves as a launching point as students investigate what orangutans need to survive. Students then investigate how palm oil farming impacts other populations of animals and how rainforests and palm oil systems differ in terms of resources and their resilience to disruptions.

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

- Materials clearly and precisely present grade-specific core concepts, recurring themes and concepts, and science and engineering practices. For example, in grades 6–8, the teacher handbook provides teachers with a clear and concise summary of OpenSciEd Instructional Elements that leads students to learn via science instruction. Within this document are important course-specific concepts, recurring themes, and SEPs. The materials also include resources for differentiating lessons for a variety of learners. The materials include student-driven conceptual learning strategies, concrete mathematical applications, and hands-on practice.
- An OpenSciEd unit storyline is a logical sequence of lessons that are motivated by students' questions. It is a science storyline because the questions arise from students' interactions with phenomena. Each step is designed to enable students to make progress on their questions by using science and engineering practices to help figure out a piece of science idea. Each piece they figure out adds to the developing explanation, model, or designed solution. A storyline provides a coherent path toward building a disciplinary core idea and cross-cutting concepts anchored in students' own experiences and questions.
- According to the Middle School Program Overview, the Middle School Program is organized around units that each target a bundle of performance expectations. The program is sequenced to enable units to build on what students have developed in prior units while supporting the development of disciplinary core ideas (DCIs), crosscutting concepts (CCCs), and SEPs coherently across the program. This coherence allows for presenting the concepts in a way that makes sense to students.

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

- Materials define the boundaries of the main concepts that students must master for the grade level or course. In the final assessment for the unit, students are prompted to demonstrate mastery of what they were taught in the Unit. Students will explain situations, plan and carry out an investigation, analyze data, and complete STAAR new item-type questions.
- Materials provide an assessment system that has five different kinds of assessments embedded in the unit: formative, summative, pre-assessment, self-assessment, and peer-assessment. Each unit's key assessment moments are listed in the Assessment Overview Table as well as the necessary materials and associated keys. The system is grounded in the recommendations of the National Research Council (2014) report, Developing Assessments for the Next Generation Science Standards.
- Materials include specific learning targets for each grade level. For example, materials provide a lesson plan document that outlines when learning targets are introduced, developed, and mastered within the unit. Also, unit and lesson objectives are shown within the unit overview, with detailed time-stamped instructions on what students will do, figure out, and be assessed on.

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Indicator 3.2

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

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

Meets| Score 6/6

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

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. Materials contain explanations and examples of science concepts, including some 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.

- Materials include guiding documents that explain how content and concepts increase in depth and complexity across lessons and units within the grade level. For example, grades 6–8 include a teacher guide with a description of the unit.
- Materials outline the horizontal alignment of disciplinary core idea (DCI) progressions throughout the middle school program. Along with the horizontal alignment, the progression of complexity is stated.
- In the Teacher Background Knowledge, there is an OpenSciEd Scope and Sequence that indicates where the Unit will fall in the curriculum. For example, Unit 6.2 Thermal Energy is coded as a Prior PE for Unit 7.1 Chemical Reactions and Matter. The Scope and Sequence details how PEs are bundled in units and how each unit builds on prior units. It includes DCIs, crosscutting concepts (CCCs), and science and engineering practices (SEPs) that build coherently across the program.
- The Unit Overview provides detailed instructions on what students will investigate throughout the unit. Each specific lesson provides what students will do for each performance expectation. The expectations highlight what specific SEPs are being implemented and recurring themes and

concepts. Materials provide a chart outlining the focus of all SEPs throughout the middle curriculum.

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 identify common grade-level misconceptions within the lesson information document. Materials in grades 6–8 are labeled as “where we are not going.” It states what level of understanding the student should have and what they will not understand through the unit. Throughout the lessons, teachers are provided “Assessment Opportunities.” In this section, the lesson offers guidance to teachers if students don't understand the content. For example, in Lesson 2, Day 2 of Unit 6.1, the Assessment Opportunity explains that if students don't have the prior fourth-grade knowledge of light bouncing off objects, then do not continue with the building prerequisite understanding discussion. Instead, they are redirected to Building Prerequisite Understanding. These alternate activities are provided in most lessons to support teachers in recognizing barriers to student conceptual development.
- In Unit 6.1, Lesson 2, there is an additional guidance section outlined for teachers with guidance as well as explanations and examples. This section gives suggestions on what teachers can do if the group is struggling. There are suggested prompts and examples for teachers to review with students. There is a supporting emergent multilingual students section that is given to help with students’ conceptual development, guiding teachers on how to help them complete investigations. Materials build toward the performance expectation, which guides teachers on key ideas and what to look and listen for, as well as what to do in different activities and situations for students.
- In Unit 6.9, a “Teacher Background Knowledge” document is provided. It provides teachers with additional ideas that students may have or know from earlier grades or units. It also gives teachers additional strategies to support equitable science learning and makes connections between the content in the unit to engineering and technology applications as well as to the nature of science.

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

- The Middle School Program Overview provides the intent and purpose of the instructional program as well as the rationale for unit and lesson design. This document explains the structure of the program as well as the rationale behind the program's scope and sequence.
- The teacher handbook explains the program's instructional approach, provides teachers with explanations of overarching concepts in the program, and references the researched-based strategies present in each unit within the SEPs and Themes. The teacher handbook includes the rationale, routine, and purpose for learning, and lessons are student-centered instead of teacher-centered.
- Materials include the purpose of the instructional design of the program inside the lessons. For example, in Unit 6.3, Lesson 1, Where We Are Going and Not Going, the lessons of the unit are introduced and discussed. The purpose and explanation of the lesson are outlined, as well as prior knowledge needed from prior units and knowledge. “Where We Are Not Going” discusses what the teacher needs to avoid and redirect the students from generating when investigating the phenomenon during the Unit.

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Indicator 4.1

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

1	Materials consistently support students' meaningful sensemaking through reading, writing, thinking, and acting as scientists and engineers.	M
2	Materials provide multiple opportunities for students to engage with grade-level appropriate scientific texts to gather evidence and develop an understanding of concepts.	M
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

Meets| Score 4/4

The materials meet the criteria for this indicator. Materials provide 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 multiple 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.

- According to the Middle School Program Overview, this program "is a comprehensive middle school science curriculum that empowers students to ask questions, design investigations, and solutions, and figure out the interesting and puzzling world. OpenSciEd empowers students to be the knowers and doers of science and develops a classroom in which the ideas heard from peers move thinking forward and develop students' abilities to think, read, write and argue as scientists and engineers."
- The Teacher Handbook explains the use of "Storylines" to provide students with a coherent experience that is motivated by the students' own desire to explain something they don't understand or to solve a problem. Materials identify the sequences of activities for students to use sensemaking. Students observe a phenomenon, then must brainstorm, collaborate, collect, organize, and analyze data to include illustrations: "Learners should be motivated to work through the next step in a science unit just as they are motivated to see what happens next in an unfolding story."

- Students in grades 6–8 will have a science notebook that creates a space for students to record investigations and communicate their ideas about phenomena. Developing this notebook can create meaningful sensemaking and a sense of ownership of their work through reading, writing, thinking, and acting like scientists and engineers. It is a record of how their ideas evolve over time. For example, in Unit 6.2, Lesson 2, students use their scientific notebook to develop a chart, write a claim and defend it, record data, define words, and come to a consensus as a group about "How are earthquakes related to where mountains are located?"

Materials provide multiple 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 with grade-level appropriate scientific texts to gather evidence and develop understanding of concepts. For example, in Unit 6.3, students investigate weather data, conduct investigations, work with manipulatives, simulations and labs to figure out how molecules in different phases change states under different conditions, and conduct investigations into why air moves the way it does.
- In Unit 8.7, students explore and analyze a winter storm that sparks questions and ideas for investigations about why it would end up affecting a different part of the country a day later. Students investigate changes in conditions and explore interactions of weather to come to apply their understanding to develop explanations.
- In Unit 5, Natural Hazards, Lesson 6, students are asked to read about tsunamis in an article called "How are tsunamis detected and warning signals sent?" Students read about how tsunamis are detected using a complex system of instruments and accounts of tsunami survivors from Japan. Students set a purpose for their reading, and as they read, they make notes of new questions and new vocabulary.

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 Unit 6.1, students develop and use a model to explain how light interacts with the one-way mirror, glass, regular mirrors, the eye, and the brain. Students explain how the one-way mirror acts like a mirror on the light side of the system and acts like a window on the dark side of the system. Students apply their findings to everyday phenomenon models developed for explaining the one-way mirror.
- Students represent their thinking about anchoring phenomena by writing, drawing, and sharing their own initial models, explanations, or design solutions. These might be represented in their science notebooks.
- In Unit 6, Lesson 5, students use provided images to observe the basic structure of nerve cells. They document and share observations and make comparisons to the structure of blood cells. They then use a scaffolding tool to gather information from a reading about the structure and function of nerves and the nervous system.

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. For example, in Unit 6.3, the unit starts out with anchoring students in the exploration of a series of videos of hailstorms from different locations across the country at different times of the year Students investigate weather data specific to these events and the temperature profile of the atmosphere above the Earth's surface. They conduct investigations into how sunlight affects the temperature of different surfaces and the air above them and how this contributes to cloud formation and growth. Students work with manipulatives, simulations, and labs to figure out how molecules in different phases change states under different conditions and conduct investigations into why air moves the way it does as it is heated and cooled.

- For example, in Unit 6.3.21, students are placed in groups. Within each group, one partnership analyzes Pathway 1, and the other partnership should analyze Pathway 2 on Maps and Data for the Pacific Northwest and Gulf Coast areas. The teacher reminds them to use the "I2" Sensemaking strategy. (The Identify and Interpret (I2) strategy helps you make sense of graphs, figures, sketches, and other ways to represent data. This strategy helps you break down the information into smaller parts. To do this, you first identify what you see in the graph or figure. Then you interpret each of those observations by deciding what they mean.) Students are provided with directions that break down the I2 strategy. When they are finished interpreting the data, students tape maps and data for the Pacific Northwest and Gulf Coast into their notebooks.
- According to the Teacher Handbook, each unit includes a "making sense" portion. This represents the part of the unit where "students try to come up with an explanation, model, or some other reasoning to explain why or how the phenomenon under investigation is happening. The point of this element is for students to voice their initial ideas about the phenomenon, no matter how inaccurate or far-fetched they may be. The purpose is to lay a foundation for the investigations they will conduct throughout the unit that will lead them to a scientific understanding. By trying to make sense of the phenomenon themselves, students generate ideas that lead to questions and theories that they will want to investigate."
- For example, in Unit 6.3, students compare and contrast hailstorms by viewing videos. They are prompted to discuss and explain their findings by individually thinking before turning and talking.
- For example, in the 6.2 storyline, students interpret the test results of their cup design to minimize/maximize thermal energy transfer in everyday examples. Convection is brought back in 6.3, Lesson 12, connecting convection with weather patterns.

Kiddom OpenSciEd Grade 6

Indicator 5.1

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

1	Materials prompt students to use evidence to support their hypotheses and claims.	M
2	Materials include embedded opportunities to develop and utilize scientific vocabulary in context.	M
3	Materials integrate argumentation and discourse throughout to support students' development of content knowledge and skills as appropriate for the concept and grade level.	M
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.	M

Meets| Score 4/4

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

Materials prompt students to use evidence to support their hypotheses and claims. Materials include embedded opportunities to develop and utilize scientific vocabulary in context. Materials integrate argumentation and discourse throughout to support students' development of content knowledge and skills as appropriate for the concept and grade level. 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.

Evidence includes but is not limited to:

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

- Materials provide opportunities for students to develop how to use evidence to support their hypotheses and claims. For example, in grade 6, Lesson 3, Day 2, students use weather balloon data to analyze and find patterns supporting the claim that air higher in the atmosphere is colder than the air near the ground. Materials provide suggestions with prompts for class discussion about data. After comparing their data and observations with another pair of students, they are asked to make a claim about the relationship between the temperature of the air and the distance from the ground and support it with evidence. Students develop a consensus model for representing the motion of the molecules that make up air at different temperatures.
- For example, in Lesson 3 of Unit 7, students collect and produce data showing patterns of changes in daylight and the angle of elevation of the Sun in the sky to serve as evidence to evaluate the accuracy of an initial physical Earth–Sun System model.

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

- Materials include opportunities to develop and use vocabulary after having a concrete or firsthand experience to which they can contextualize new terms. For example, grades 6–8

materials present scientific vocabulary terms using clear photographs, videos, and definitions in student-friendly language. Each unit storyline includes graphic pictures and diagrams. During the experiments, students record evidence that supports their claims during investigations in their science journals.

- For example, materials state that student notes must contain a designated set of vocabulary words. In Unit 3, Lesson 1, students observe three video clips of hail falling in different areas of the United States on different days. The teacher introduces the word precipitation once students notice that it is raining and hailing during the second video. After discussing the definition and examples, students add the word to their word wall along with those examples to contextualize new terms.
- For example, in Unit 9, teachers are guided to have students work with partners and as a whole group to collaboratively discuss and develop their thinking about new vocabulary to include disruptions, biodiversity, and mono-crop systems. These discussions require students to share their ideas, reflect on others' ideas, and modify their own views when warranted to come to a consensus.

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

- Materials provide opportunities for students to develop how to engage in the practice of argumentation and discourse. For example, the Teacher Handbook provides teachers with Questioning Strategies that promote student discourse. These questioning strategies are intended to surface, challenge, and move student thinking forward while fostering a community of science learners. While they are initially intended as questions that teachers can use, if they are incorporated as part of the norms of classroom culture, students will also begin asking these questions of each other.
- For example, in Lesson 6.2, students work together to build understanding and discuss the solutions they have acquired from the unit learning experiences. The materials use three specific scientific communication types: Initial Ideas, Building Understanding, and Consensus. First, students share initial ideas/experiences, make connections between peer observations and real-world experiences, and provide a chance to share and make sense of ideas. Second, students share, connect, critique, and build on others' findings, claims, evidence, and explanations and provide the teacher and students with opportunities to clarify identified problems and which ones need further investigation. Lastly, students collectively work towards a common explanation and come to a consensus.
- For example, the Communicating in Scientific Ways chart is an example of how the materials provide students with visible sentence stems to help prompt their communication with one another: "The goal of the Action & Expression principle is to ensure that learners can fully communicate what they know through varied forms of action or expression."

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 instruction for constructing and presenting a verbal or written argument to problems using evidence acquired from learning experiences. For example, in grades 6–8, all units begin with carefully selected phenomena to anchor a storyline and motivate the development of target disciplinary core ideas, crosscutting concepts, and science and

engineering practices. These anchoring phenomena are used to draw students into the storyline by presenting the natural challenge of explaining something or solving a problem. Other phenomena may be introduced at key points in a storyline to maintain interest or push students to delve more deeply.

- For example, in Unit 2, Lesson 11, students construct an explanation about why food coloring moves more in hot water than in cold water using the idea that at the particle scale, particles in liquids at warmer temperatures have more kinetic energy than particles in liquids at cooler temperatures. Students write an argument explaining why the food coloring spread more in hot water. Students are required to provide evidence for their claims.
- For example, in grade 6, students are given the prompt, “How can we inform others in our community about the palm oil problem and convince them to take action?” Students develop a public service announcement based on previous claims and evidence about palm oil affecting orangutans’ habitats.

Kiddom OpenSciEd Grade 6

Indicator 5.2

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

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

Meets| Score 4/4

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

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

Evidence includes but is not limited to:

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

- Materials provide teacher guidance on anticipating student responses and the use of questioning to deepen student thinking throughout the lessons. For example, in Unit 6.1, Lesson 3, teachers are provided with suggested prompts, sample student responses, and follow-up questions to guide student thinking.
- For example, in Unit 8, "Contact Forces," teachers pose three questions for students to consider as they read an article about force. Teachers are provided with a "note for evaluating responses," in which sample student responses are provided, as well as possible further questions to pose to students.
- For example, in Unit 1, "Setting the Stage for Learning," the teacher allows time for students to read an article about collecting and understanding qualitative and quantitative data. After students read the article, the teacher facilitates a classroom discussion by asking students a set of questions. Materials provide the questions as well as sample student responses.
- For example, in grade 6.8, Lesson 1, Day 1, students discuss the damage resulting from types of collisions. Teachers can access a chart of prompts and student responses under "Key Ideas" to see what to listen for.

Kiddom OpenSciEd Grade 6

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

- Materials include teacher guidance on how to support students' development and use of scientific vocabulary in context. For example, in the Teacher Background Knowledge in Unit 6.9, there is a Guidance for Developing Your Word Wall. The teacher guide provides a suggested definition for each term to support in helping develop a student-friendly definition.
- For example, in Unit 9 on Ecosystem Dynamics, the Teacher Background Knowledge section provides teachers with guidance for developing the unit's word wall: "The Word Wall becomes an ongoing collection of words we will continue to use, including all the words we earn in the unit and possibly a few key words we encounter." It also connects words from other units. The list of vocabulary words for the unit is presented in a table that indicates when in the lesson the word will be introduced or encountered. Materials suggest that students create cards for the Word Wall at the moment, using definitions and pictorial representations that the class develops together as they discuss their experiences in the lesson.
- For example, in the teacher handbook, the section Developing Scientific Languages details the approach of embedding vocabulary within the students' experience. It states, "In each lesson, we want students engaging in practices around a question that they feel a genuine need or drive to figure out. Front-loading vocabulary hinders this process and also puts up barriers on emergent multilingual students to engage in class discussions. This approach to vocabulary building doesn't undermine the sensemaking of students, nor defeat the goal of figuring out important science ideas in each lesson. We want to give students a rich opportunity and experience to wrestle with developing these important science ideas before introducing vocabulary to represent an abbreviated description of those ideas."

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

- Materials provide teacher guidance on preparing for student discourse and supporting students in using evidence. For example, in the Teacher Handbook for sixth grade, there are Questioning Strategies to Support Discussions provided. The units suggest four questioning strategies for teachers to use to promote student discourse. These questioning strategies are intended to surface, challenge, and move forward student thinking while also fostering a community of science learners. These strategies are 1) Elicit questions, 2) Probe or clarify questions, 3) Challenge questions 4) Questions to support science discourse.
- For example, in Unit 6.1, Lesson 7, teachers are guided on having the students answer the question, "Why do the music student and the teacher see the music student, but the music student can't see the teacher?" The teacher helps guide the students to facilitate the class in constructing an explanation to answer the question and gives prompts to help the class develop a shared explanation. Teachers are also guided to push students to back up ideas with evidence and invite support or critique from all students.
- For example, the Teacher Handbook provides guidance for consensus discussions. According to the handbook, the purpose of such discussions is to collectively work towards a common (class-level) explanation or model. This goal includes capturing the areas of agreement for which the class has evidence as well as areas where the class still disagrees and might need further evidence. Consensus discussions also allow the teacher to take stock of where the class is in its figuring out and support the public revision of earlier ideas.

Kiddom OpenSciEd Grade 6

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

- Materials support and guide teachers in facilitating the sharing of students' thinking and finding solutions with communication in lessons throughout the year. For example, in Unit 6.1, students have consensus discussions to collectively work toward a common explanation or model. Teachers are guided to ask students to offer proposals for a model, explanation, or solution, ask the class who agrees, disagrees, has alternatives, or questions the proposed idea, and ask students to support or challenge models, solutions, and explanations based on input and evidence. Teachers are provided with key ideas to promote discussion, prompts, and example responses to facilitate student thinking and finding solutions, what to listen for in groups, and follow-up questions.
- For example, in Unit 6.1, Lesson 3, Day 1, examples are given for sample student responses. In return, teachers are given questions that facilitate student predictions using the weather balloon data. Students can read an article and record their responses to prompts about scientific hypotheses, theories, and laws. The teacher facilitates a classroom discussion by asking students follow-up questions to ensure students understand the answers. Examples are given for sample student responses. In return, teachers are given questions that facilitate student predictions using the weather balloon data.
- For example, the materials use three specific types of communication in scientific ways. First, Initial Ideas' purpose is for students to share initial ideas/experiences, make connections between peer observations and real-world experiences, and provide a chance to share and make sense of ideas. Second, Building Understandings' purpose is for students to share, connect, critique, and build on others' findings, claims, evidence, and explanations and provide the teacher and students with opportunities to clarify identified problems and which ones need further investigation. Lastly, Consensus' purpose is for students to collectively work towards a common explanation.
- For example, in Lesson 6.9.19, Day 2, teachers are provided a learning plan snapshot with time stamps for facilitation. The lesson gives students the prompt: "How can we inform others in our community about the palm oil problem and convince them to take action?" They are to develop a PSA based on previous claims and evidence about palm oil affecting orangutan habitats.

Kiddom OpenSciEd Grade 6

Indicator 6.1

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

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

Meets| Score 2/2

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

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

Evidence includes but is not limited to:

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

- Material consistently provides formative and informal assessment materials. For example, the Assessment Tab includes summative assessments that include formal opportunities to assess student learning.
- The variety of formats includes TEKS and Unit themes assessed with diagnostic benchmarks, lab scoring criteria, evidence notebooks, and Unit Readiness Checks. Formative Unit A/B assessments are available in all units, as well as summative Unit assessments that assess all TEKS.
- Other formative assessments in materials include Lesson Check and Lesson Check on ED at the end of every lesson. Informal assessments are also given throughout the lessons, with student checks for understanding by raising their hand or answering questions verbally. Unit Performance Tasks are included in materials to provide summative assessments.
    - For example, in Unit 6.1, on Day 1, students record noticings and wonderings from the introduction of a puzzling phenomenon. On Days 3–13, students create, identify, and compare diagrams of models with a partner and individually, carry out an investigation, and discuss the evidence in a Scientist Circle. On Day 14, students complete an assessment task to demonstrate mastery of the phenomenon.

    - For example, at the end of Unit 6.4, Lesson 14 students take the Fossil Assessment to explain how the marine fossil is at the top of Mt. Everest, how it is exposed, and if it will always be on Mt. Everest.
- In grades 6-8, the teacher handbook states, "The system has assessments embedded in the unit, options for self- and peer-assessment, and multi-component tasks." One of the five assessments is the pre-assessment. They are in the form of initial models and DQB questions.
    - For example, the teacher facilitates a whole-class discussion by calling on student volunteers to share their noticings and wonderings from the reading, photos, and videos. What is shared is recorded on the class Notice and Wonder poster. Teachers can assess students' initial questions on Day 2 as the class constructs the Local Hazards poster and the Technologies or Related Solutions poster or on Day 3 as the class constructs the DQB.

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

- Materials include detailed lesson plans that outline how the materials can be used to teach specific concepts and skills and provide guidance on how to assess all of the student expectations.
    - For example, there is a grade 6 TEKS alignment chart that indicates which TEKS are taught and assessed in which units within the lessons. A "Learning Plan Snapshot" is provided for each lesson. This document includes a summary of student expectations for each part of the lesson.
- Materials assess student expectations over the breadth of the sixth-grade science curriculum and indicate which student expectations are being assessed in each assessment.

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

- Materials include assessments that integrate science concepts with recurring themes and concepts.
    - For example, on the lesson assessment in 6.1.08, students are asked to apply science ideas and evidence from classroom investigations to explain why they see what they see, use words or pictures (or a combination) to explain where light travels that causes them to see the person in this image, and evaluate responses from real-world scenarios provided from prior investigations and evidence.
    - For example, on the lesson assessment in 6.4.14, students are asked to apply science ideas and evidence from classroom investigations to develop models and explain what is happening in the models using supporting evidence that was discovered in investigations in prior lessons.
    - For example, in the first unit of sixth grade, students learn how to distinguish between scientific hypotheses, theories, and laws by reading an article. After students read the article, teachers facilitate a classroom discussion by asking students questions and then ensuring students understand the answers.
- Materials include assessments that integrate science and engineering practices with recurring themes and concepts.

- Materials include “Making Sense of Phenomena,” which is part of a formative assessment outline in all lessons that gives students the chance to revisit anchoring phenomena and apply Claims, Evidence, and Reasoning models to demonstrate learning. Remediation for struggling students is given to teachers, which helps students connect investigative phenomena back to anchoring phenomena.
- For example, at the end of each lesson and unit, there is an evaluation of a model, reexamination of the DQB, and/or assessment document that allows students to make connections and wrap up their learning for mastery.

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

- Materials consistently require students to apply knowledge and skills to new situations. Some questions in the quizzes and tests require the application of knowledge and skills.
  - For example, a two-part question in the unit test (Test A) in the Introduction to Matter unit requires students to apply their knowledge about the density of different objects and their data analysis skills to predict which objects will sink when dropped in water and the reason why certain objects would float or sink.
  - For example, a question in Quiz A in the Pure Substances and Mixtures lesson in the Introduction to Matter unit requires students to apply their knowledge about pure substances and mixtures to identify each matter sample described in the given scenario as pure substances or mixtures.
- Materials include lessons that have a driving question that has to be answered by the student in a summative response. The students apply the concept learned to real-world problems, thus helping the teacher assess the learning of the students.
  - For example, in the Unit Potential and Kinetic Energy, students learn about the two different kinds of energy and how they affect all objects. In the Elaborate section, students have to explain, “What are some factors that affect how much kinetic energy a moving vehicle has?” Students have to compare the kinetic energy of a car or truck to that of a bicycle or motorcycle. Students apply their learning to solve real-world problems.

Kiddom OpenSciEd Grade 6

Indicator 6.2

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

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

Meets | Score 2/2

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

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

Evidence includes but is not limited to:

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

- Materials consistently include information that guides teachers in evaluating student responses. In grade 6 Unit Assessments, there is a Teacher Answer Key provided at the end of the unit. The key provides a rubric for grading responses and how to evaluate the answers that are provided by students. Teachers are provided with Notes for Evaluating Responses after every question. This guidance provides teachers with knowledge of what the student is thinking and how to evaluate based on different responses that could be received.
    - For example, in a unit on natural hazards, students read an article and look at photos and videos of an earthquake that caused a tsunami. Students brainstorm related phenomena (local natural hazards) and ask questions to generate a list of data and information needed to better understand where natural hazards occur and how we can prepare for them. Later in the unit, they are asked to recall the data and discuss questions posed by the teacher based on the data. The teacher assesses student understanding as students orally respond to the discussion questions. Materials provide notes for evaluating students' oral responses.
- Materials include follow-up suggestions for formative assessments in the Teacher's Guide, provide examples of acceptable answers for evaluating student responses, and include

suggested teacher actions to address student learning gaps in lessons and units. In grades 6–8, lessons have suggested prompts, sample student responses, and follow-up questions to support teachers with informal and formative assessments.

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 provide guidance and tools to support teachers in responding to data to inform instruction. According to the Teacher Handbook, each unit includes an assessment system that offers many opportunities for different types of assessments that work together to help teachers inform instruction throughout the lessons. Types of assessments include pre-assessments, formative assessments, self-assessments, summative assessments, and peer assessments. Each unit has identified these key moments of assessment and has included them, along with assessment and scoring guidance, in the Assessment Overview Table at the beginning of each Teacher Edition and within the keys and rubrics associated with lessons.
    - For example, in Unit 7, Lesson 1, students consider how the position of the sunset on Earth can connect their daily lives to the sky and then brainstorm other interesting patterns in the sky. Teachers are encouraged to use this discussion activity as a pre-assessment to gauge how much their students already know about space. Materials provide suggested prompts to guide student thinking. Additional guidance is provided for teachers to be prepared for a variety of student responses.
- Materials provide questions or prompts for teachers to reflect upon while examining patterns in the data.
    - For example, in Unit 6.1, Lesson 1, Day 4, based on student responses, an "Asking Questions Tool: Open/Closed Questions" is provided. This question is a resource teachers can use later in the unit and in subsequent units to help students turn close-ended questions into open-ended ones.
    - For example, in Unit 6.1, Lesson 3, Day 1, teachers are given guidance as to what to do if students struggle to compare phenomena using qualitative data.

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

- The information gathered from the assessment tools helps teachers when planning differentiated instruction.
    - For example, the Lesson 6.1.8 assessment rubric gives teacher guidance to identify if a student has mastered the content. The indication of + or ++ determines the level of mastery: if several ideas marked with a + are missing, this may indicate that a student may be struggling. If several ideas are marked with ++, then this indicates that a student is bringing a deeper understanding.
    - For example, in Unit 6.1, there is a formative assessment opportunity provided that gives teachers guidance on how to differentiate their lessons. For example, "if some students are struggling with these ideas, visit these students during their investigations on Day 2 and facilitate discussions around their work in Activities #5 and #6 to help them reason about particle collisions transferring KE to neighboring particles in solids. When you are working with these students, you might decide to curtail or skip doing

Activities #7 and #8 with them, or you might want to work through a portion of them together."

- The information gathered from the assessment tools helps teachers when planning core instruction. For example, in Lesson 6.9.01, there is an additional guidance section that suggests ways to make instructional decisions (e.g., grouping students [pairs, small group, individual, and whole class], how to set objectives and suggested prompts to facilitate student discourse, and what skills should be focused on during each section of the lesson).
- Materials provide suggestions for teachers to consider regarding the potential need for whole class review or reteaching. For example, teachers can reference the teacher guide during unit 6.2, Lesson 13, Day 1, Activity 6. Students are working in groups investigating particle collisions using marbles as the model. Teachers are given direction when monitoring groups looking for student responses. They are to look for struggling students and advise them to visit those students and/or reduce questions.
- Materials include self-reflection questions for teachers to use after analyzing and interpreting data.
    - For example, in Unit 6.2, Lesson 4, Day 2, teacher guidance states that students' calculations on the handout "Procedure: Measuring Changes in Mass in the Cups" and their responses in its Making Sense section are a good opportunity to assess the use of this practice in concert with the related science ideas targeted by the lesson-level performance expectations.
    - For example, in Unit 6.2, Lesson 5, Day 1, teacher guidance states teachers can relate the Water Droplet Investigation to students' prior experiences again. This comment addresses misconceptions in the lesson.

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 student resources for teachers to use in responding to performance data.
    - For example, in Unit 4, students are asked to use evidence from their notebook as they think about how a fossil, which is much older than the mountain itself, ended up towards the top of Mt. Everest. Materials provide teachers with an answer key, which provides teachers with what answers should and could be.
    - For example, students are asked to construct an argument supported by evidence based on the data they analyzed and the information they obtained in the lesson. Teachers are provided with notes for evaluating responses,
- Grades 6–8 lessons provide direct instruction of science concepts, followed by reviews of application to those concepts, including creating and revisiting the DQB. Materials provide documents to support teachers in developing action plans to document teacher-provided supports designed to accelerate learning and academic growth. Materials suggest ways to reteach through prompts as well as extension activities to deepen understanding.

Kiddom OpenSciEd Grade 6

Indicator 6.3

Assessments are clear and easy to understand.

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

Meets | Score 2/2

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

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

Evidence includes but is not limited to:

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

- Assessments contain items that are scientifically accurate. Formative and summative assessments include assessment items that align with taught objectives and present grade-level content and concepts, science and engineering practices, and recurring themes and concepts in a scientifically accurate way.
    - For example, in Unit 6.3, a lesson assessment contains assessment tasks to draw and label predictions of where you would find other tropical rainforests around the world accurately.
    - For example, in Unit 6.9, Lesson 21, Day 1, the levels of taxonomy are correct.
    - For example, in 6.3.22, the unit assessment contains an item that scientifically states thermal energy instead of heat.
- Assessments contain items for the grade level that avoid bias. Formative and summative assessments include assessment content and examples in a fair and impartial manner 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, in Unit 6.6, in individual assessment items, students apply what they have figured out about how the body heals to fill gaps from injuries to explain what happens to the structures of the bone at the growth plate as a child grows into an adult. No specific race or ethnicity is used.
    - For example, students use the information found in Unit 6.5, Lesson 10, Reference Natural Hazards Around the World, to support the assessment. The reference includes

information about the US, Australia, and indigenous peoples of North, Central, and South America.
    - For example, in 6.5.10, students use digital interactive maps to explore hazard risk data across nine different hazards that affect the United States. Students are asked to identify a natural hazard that impacts them in some way or that they feel would be important to investigate. It could be one that affects their community, a community that they are familiar with, or a place they have always wanted to visit.

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

- Assessment tools use clear pictures and graphics. Images in lessons are authentic photos as well as clearly labeled diagrams to enhance student and teacher guidance.
    - For example, in 6.4, the picture of Mt. Everest and fossils is a real-life example that enhances students' visualization for those who have never seen one or the ELL students to make a connection.
    - For example, in the assessment in Unit 3, Lesson 13, students are provided with a model of the initial formation of a hurricane. Students are asked to annotate the model to show how the patterns of air movement lead to the formation of a hurricane.
    - For example, in Unit 6.3, the assessment materials contain detailed maps and diagrams comparing the driest places in the world and their average annual rainfall.
- Assessments contain pictures and graphics that are developmentally appropriate.
    - For example, in Unit 6.6, materials contain pictures and graphics of growth plates of child and adult knees that are developmentally appropriate with enough detail for learning the science content but without excessive detail that would overwhelm a middle school student.
    - For example, in 6.6, Lesson 2, students are dissecting a chicken wing. There is enough detail for learning science content but without excessive detail that would alarm or overwhelm middle school students since most students have seen or handled a chicken wing.
    - For example, in the assessment in Unit 3, Lesson 22, students are provided with three world maps. They are asked to use the first two maps to inform their prediction. Then they're asked to draw on the third map to show where they predict they would find other tropical rainforests around the world, in addition to South America.

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

- Materials provide consistent guidance to ensure consistent and accurate administration of assessment tools.
    - For example, the Teacher Handbook explains that each unit includes an assessment system that offers many opportunities for different types of assessments that work together to help teachers inform instruction throughout the lessons. It goes on to explain each type of assessment offered and how the teacher should use each type of assessment to gauge student progress.
    - For example, the Teacher Handbook gives examples of how to use the DQBs as formative assessments. Also, it relays the two structures that teachers can use during any unit, allowing teachers the flexibility to customize for their local context.
- Materials include detailed information that supports the teacher’s understanding of assessment tools and their scoring procedures.

- For example, in the assessments in Unit 4, Lesson 11, teachers are provided with an answer key that includes guidance for scoring written responses and sample student answers.
- For example, Lesson 6.1.8 has a distinct section in the Teacher's Guide on assessment that includes an example of a scored performance assessment with an explanation for each of its components.

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 accommodations for assessment tools so that students of all abilities can demonstrate mastery of learning goals. For assessments, materials state, "Some students may benefit from using multiple modalities to show their thinking for any or all of the questions on this assessment. You may consider allowing some students to present their answers verbally with you or another student acting as a scribe to record their thinking on paper. Other students may benefit from using gestures rather than images to describe parts of their models. Some students might also benefit from using manipulatives to represent parts of the model and to support a written or verbal explanation of what's happening in each part of the model. In each case, encouraging students to use multiple modalities to show their thinking creates a clear, accessible, equitable pathway for all students to demonstrate proficiency."
- The Teacher Handbook states that materials provide teachers with guidance on how to adapt the materials for their students; these strategies are discussed in the teacher guide in educative boxes titled "Attending to Equity." These educational boxes are embedded within the lessons in each unit to provide specific and just-in-time support for teachers.
- All sixth-grade Assessments provide a personalized feature that allows teachers to differentiate assessments for the students based on accommodations.
- Materials provide a drawing feature so students can write or draw on graphics and pictures in an assessment.
    - For example, in the Unit 6.3 assessment, students can draw in the organizer and maps to complete the assessment.

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Indicator 7.1

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

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

Meets | Score 2/2

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

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

Evidence includes but is not limited to:

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

- In grade 6, lessons include recommendations for additional guidance to support students who have not yet achieved mastery. Suggested prompts, sample student responses, and follow-up questions are provided if students don't bring up what they noticed happening to help elicit that line of observation. For example, in Unit 6.4, Lesson 14 states that students struggling to connect processes to their related phenomena may need to be reminded of two terms added to the Word Wall in Lesson 7, “constructive” and “destructive,” after discovering different ways volcanoes affect the land.
- The teacher handbook includes strategies for supporting equitable participation during instruction. For example, “in eliciting initial ideas or initial questions, the goal is to get as many ideas on the table as possible. Consider asking students to ‘write and pass’ a sheet of paper around their group until they have at least ten items. That way, all students get a chance to contribute, to see others’ ideas, and to add their thinking in a low-stakes way. Make sure to let students know that these ideas can be expressed in different ways (e.g., pictures, graphs) and that they are not limited to words in English.”
- Materials ensure that teachers can target instruction to reteach skills necessary to access grade-level content and “attend to equity.” For example, in Unit 6, Lesson 6, Day 1, teachers are given suggestions to support students who might benefit from other options for representation. Suggestions include printing Microscopic Images: Muscle, Bone, and Skin and directing students to annotate those images with ideas about how they compare to what they see in their microscopes and/or ideas about the patterns they notice in the structures they see across the samples.

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Materials provide enrichment activities for all levels of learners.

- Materials are designed to promote equitable access to high-quality science learning experiences for all students. The materials include enrichment activities that contain challenging activities and assignments that extend beyond the regular curriculum and stimulate critical thinking, problem-solving, and creativity.
- In Unit 1, Lesson 9, teachers are given suggestions for extending the unit by inviting guest speakers who work in STEM fields to speak to the class, creating a class project where students research and present on different STEM careers, and encouraging students to explore STEM careers by visiting museums, attending STEM events, or conducting informational interviews with STEM professionals.
- In Unit 6.2, Lesson 1, students are assigned a home-learning opportunity that broadens related phenomena and gives students an opportunity to leverage their everyday, out-of-school experiences to augment their classroom learning. This action should make the anchoring phenomenon more personally meaningful to each student.

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

- Materials include questions for the teacher as a means of supporting students when they struggle to maintain engagement on a self-engaged demanding task. For example, in the grades 6–8 lesson daily overview, teachers are provided with suggested prompts and possible student answers to re-engage students when struggling with a task without lowering the cognitive demand of the task. Lessons include a variety of student activities that are assigned based on the achievement of the student's mastery of the science and engineering practices (SEPs) and content knowledge.
- Additional Guidance callouts provide more specific instructions to teachers about how to make a learning activity successful based on their students' needs. The callout boxes provide a variety of instructions to modify the timing, grouping, or resources for a particular activity. Alternate Activity callouts provide guidance to teachers about going further or streamlining activities based on student progress and/or completing different learning activities. These can be particularly helpful for students with high interest or for students or classrooms that need to modify the unit based on the availability of time or access to resources.

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

Meets| Score 2/2

The materials meet the criteria for this indicator. Materials 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 consistently support multiple types of practices (e.g., modeled, guided, collaborative, independent) and provide 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 opportunities for students to engage in phenomena-based learning activities that include models, graphic organizers, and consensus discussions. For example, the lessons in the units provide opportunities for student-led investigation and modeling. Students also create and answer discussions related to the course level.
- Lessons include video clips to introduce and reinforce specific science concepts. For example, the Anchoring Phenomenon for Unit 6.1 includes a video where a student can see only his or her reflection in a one-way mirror while the teacher on the other side can see through the one-way mirror. In Unit 6.6, Lesson 1, students watch a video that shows how the structures that make up the eye work together with the brain.
- The grades 6–8 materials include an investigation question that drives learning for the unit and lesson. An explanation of how teachers can use the driving question within sense-making discussions is included.
- The Teacher Handbook provides a detailed list of strategies for supporting equitable participation during discussions. The handbook also provides teachers with ways to use Scientists Circles to support an equitable science classroom. For example, all units present

multiple opportunities for student-led investigations, questioning, and discussions related to the student's course level.

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

- Materials support a variety of instructional groupings (e.g., whole group, small group, partners, one-on-one). Lessons on core content and concepts are provided to the whole group, while suggestions are provided for small group or one-on-one practice and activities. The Teacher Handbook gives teachers strategies for actively using and reinforcing community norms. The strategy suggests that teachers give students time to reflect on the norms individually and discuss them as a class, as well as in pairs through "partner check-ins."
    - For example, in Unit 4, Lesson 1, students reflect on a question posed by their teacher and record their reflections in their notebooks (independently). Then, they talk with their "elbow partner" in the Scientist Circle about related questions that the teacher poses. Students work individually to explore phenomena and develop a model, work as a whole class to develop classroom norms and a consensus model, complete a jigsaw assignment, and then work in small groups to look over their data.
    - For example, in Unit 1, Lesson 1, students are guided to work individually to draw system models, work with their partners to discuss and share conclusions from their investigations, and work as a small group to convene a Scientists Circle to construct questions for the Driving Question Board (DQB). Students are invited to share noticings in a whole-class discussion. Teachers are directed to "encourage students to draw from their own ideas and not worry about whether their ideas or questions are right or wrong. All ideas and questions are welcome. This provides students access by supporting student engagement."

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

- The Teacher Handbook provides information on the importance of providing multiple opportunities for students to learn from each other in science classrooms.
- Materials consistently support student engagement in collaborative learning structures, such as think-pair-share, while learning new concepts. For example, the Teacher Handbook states that "materials rely on students collectively figuring out science ideas together through productive discourse and classroom talk."
- In grade 6, lessons provide opportunities for students to work in collaborative groups and whole-group guided learning to answer the unit question through investigation and preset norms. For example, in Unit 6.1, students share noticings and wonderings from the "Play the Music" video with a partner. Students lead a class discussion to record these observations and questions on a class chart.
- A DQB is used at the beginning of each unit to capture what individual students are wondering about anchoring phenomena. The DQB is then revisited throughout the unit to document the progress students are making and to launch deeper investigations and problem-solving. Independent opportunities for students to examine recent scientific case studies and complete a reflection, argument, summary, or justification assignment support multiple types of student learning.

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

- Materials represent diverse communities using images and information that are respectful and inclusive. Characteristics vary in images to include race and ethnicity, skin tone, gender identity and expression, age, disability status, body size and shape, and hair texture.
    - For example, in Unit 6.6, Lesson 1, images reflect the diversity of school communities and match the content.
    - For example, in Units 6.3 and 6.4, there are several images and names used in the student materials of lessons that represent diverse learners and cultures in the materials.
    - For example, in Unit 7, Lesson 1, students use a jigsaw strategy with a series of podcasts to learn about ways that humans across cultures and throughout time have relied on and made connections to the sky and identify patterns.
    - For example, in Unit 6, Lesson 1, students explore different ways in which individuals experience or accomplish daily tasks. Prior to teaching this lesson, teachers are encouraged to reference the document “Disability and Inclusion Awareness.” The document prepares teachers to approach this unit with sensitivity and confidence as they discuss disability as it pertains to injury and healing. They begin to develop social-emotional skills around how people may have different abilities than themselves; they learn that sometimes these abilities are a result of an injury but that it doesn’t mean the person isn’t healed or otherwise healthy.

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

Meets| Score 2/2

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

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

Evidence includes but is not limited to:

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

- Materials include linguistic accommodations commensurate with various levels of English language proficiency as defined by the ELPS.
    - For example, materials include teacher guidance for communication with English Language Learner (ELL) students, with the goal of creating comprehensible input for various levels of English language proficiency. Materials accommodate emergent bilingual (EB) students through visuals, realia, gestures, sentence stems, graphic organizers, anchor charts, and manipulatives. Materials lack specific scaffolding for each language proficiency level (Beginning, Intermediate, Advanced, and Advanced High).
    - For example, the teacher handbook includes two primary ways to support ELLs. First, through the curricular design and pedagogical routines, and second, by the educative boxes embedded in the teacher materials.
- Materials include footnote references that clearly demonstrate ELPS connections by referencing the language of the ELPS. For example, in Unit 3, Lesson 1, as students learn about "precipitation," teachers are provided with notes for "attending to equity." Materials suggest that teachers use student-friendly definitions, make connections to cognate words when possible, and include a visual representation of the word. Use these strategies throughout the unit for both "words we earn" and "words we encounter."
- In the Course Unit Storylines and Teacher Guides, information is included as a resource for teachers as a guide in using the instructional model to accommodate multilingual learners. The following is a direct quote from the text, "OpenSciEd Instructional Model: The instructional

routines that make up the OpenSciEd Instructional Model provide many scaffolded opportunities for multilingual students to practice talking in partners, small groups, and then finally as a whole class. Activities include options for students to express their ideas in many ways, with an emphasis on students using both linguistic (e.g., talking and writing) and non-linguistic (e.g., drawing, graphing) resources to share their thinking."

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

- Materials encourage strategic use of students' first language as a means to linguistic, affective, cognitive, and academic development in English.
    - For example, in Lesson 19, Day 2, "Attending to Equity: Supporting Emerging Multilingual Students," students are instructed to develop a communication project that includes key messaging about the orangutan and palm oil problem in multiple languages.
    - For example, materials include tips for teachers about the importance of allowing students to express their understanding in their first language. The Teacher Handbook states that "Teachers should encourage students to express their ideas in language and discourse styles that they are comfortable with in order to open the conversation and sensemaking to all students."
    - For example, according to the Teacher Handbook, phenomenon-driven science instruction provides emerging linguistic learners (EMLs) with authentic contexts and purposes for which to use their developing language(s) and supports students in making sense of the phenomenon being explored. Understanding the role of language in sensemaking includes valuing the assets EMLs have as well as knowing forms and features unique to each science and engineering practice.

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Indicator 7.4

Materials provide guidance on fostering connections between home and school.

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

Meets | Score 2/2

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

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

Evidence includes but is not limited to:

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

- Materials provide information to be shared with students and caregivers about the design of the program.
    - For example, the teacher handbook provides information about the use of the science storyline approach, what it entails, and the process of the routines. The course storylines provide a brief overview of each unit in the course. Materials suggest that teachers assign lessons to promote a home/school connection. Teachers are encouraged to tell students to share the storylines and explain phenomena and/or how they solved a problem.
        - For example, at the beginning of Unit 1, Light and Matter, teachers print a unit “Storyline.” A unit storyline is a logical sequence of lessons that are motivated by students' questions. It is a science storyline because the questions arise from students’ interactions with phenomena. They are designed to provide students with the goal of explaining a phenomenon and/or solving a problem.
    - For example, the Unit Storyline provides the Lesson Question, Phenomena or Design Problem, what the students do and figure out, and how they represent it. It also discusses how students will engage with each of the phenomena presented in the unit.

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

- Materials provide information to be shared with caregivers for how they can help student learning.
    - The Home Learning section of a unit has the student talk to family and/or community about the lesson.
    - For example, in Unit 4, Lesson 3, students are sent home to share what they have been figuring out in class about the surface of the Earth and what is underneath the surface. Students poll their family and friends with the following questions, “What do you know about what it is like underground in our community?” and “Have you ever dug far underground in our area and reached solid rock or bedrock? What is it like? What kind of solid rock or material is it?”
    - For example, in Unit 6.1, Lesson 14, Day 2, students use their Redesigning Your Protective Device and Stakeholder Feedback Form to get feedback from their stakeholders about their protective device design.
- The teacher handbook provides a safety acknowledgment to send home with students to share with parents and/or caregivers. The acknowledgment encourages students to go through the safety practices with their parents/caregivers to help create a safe learning environment in science class. The following is a direct quote from the handbook, “Prior to the first science investigation of the year, a safety acknowledgment form for students and parents or guardians should be provided and signed.”
- Home communication letters found at the end of the unit overview are provided for teachers as a resource to share with caregivers how they can help student learning. The following is a direct quote from the resource, “Helping your child make sense of their learning: There is no pre-teaching vocabulary because words often have multiple meanings and are often easier to remember once students have some experience with it; therefore, ask your child to recall evidence or experiences to help elaborate on what their ideas and explanations are. Encourage your child to connect how their models or drawings help explain their ideas about the one-way mirror phenomenon. Ask your child how different structures or parts interact with other structures within their models. Ask your child what question(s) they are working on currently and how the class has made progress so far. If your child sees the phenomenon or a similar phenomenon outside of school, encourage your child to record it and share it with the class, or explain to you what they think is happening.”
- For example, the Unit 6.1 Overview Materials contains a home communication letter at the end in both English and Spanish.

Materials include information to guide teacher communications with caregivers.

- Materials provide adequate information to guide teacher communications with caregivers.
    - For example, in Unit 4, Lesson 3, students are sent home to share what they have been figuring out in class about the surface of the Earth and what is underneath the surface. Students poll their family and friends with the following questions, “What do you know about what it is like underground in our community?” and "Have you ever dug far underground in our area and reached solid rock or bedrock? What is it like? What kind of solid rock or material is it?"

    - For example, in Unit 9, Lesson 1, students are making connections between orangutans and Oil Palm Trees. The teacher asks students to check the ingredient labels on household products at home for the presence of palm oil.
- To promote a home/school connection, these materials can be assigned to students to share with their families. Teachers encourage students to share the storylines explaining the phenomenon and/or how they solved a problem with their caregivers.
- Found in the sixth-grade science course Unit Storylines and Teacher Guides is a video resource provided for teachers that guides them through communicating with parents and caregivers.

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Indicator 8.1

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

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

Partial Meets | Score 1/2

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

Materials are somewhat 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 provide clear teacher guidance for facilitating student-made connections across core concepts, scientific and engineering practices, and recurring themes and concepts. Materials provide review and practice of knowledge and skills spiraled throughout the year to support mastery and retention.

Evidence includes but is not limited to:

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

- The handbook explains that the sequence of activities is designed to make sense to students using “Storylines,” which provide a brief overview of each unit and a logical sequence of lessons.
- The materials do not include a cohesive scope and sequence that shows how science knowledge and skills are addressed over the course of the entire year.
- There is a progressive order of lessons for teachers to follow as outlined in the TEKS correlation document for the sixth grade that displays the TEKS and the location of the TEKS within each unit.
- There is an ELPS correlation document for the sixth grade that displays each ELPS and the location of the ELPS within each unit.

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

- The handbook explains that the sequence of activities is designed to make sense to students using “storylines.”
- Sixth Grade Materials Prompts and checklists are provided in student materials to support them in applying and reflecting on crosscutting concepts (CCCs). CCCs are highlighted in the sidebar column.
- In the “Putting Pieces Together” section, teachers review previous units and preview upcoming concepts at the start of each new unit.

- The Teacher Handbook suggests that when teachers introduce an “Anchoring Phenomenon,” teachers encourage students to identify related phenomena from their personal experience or prior knowledge.

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

- Throughout the course, “connect to previous unit ideas” are incorporated into lessons to spiral content and support mastery and retention. For example, in 6.3.01, the Connect to Previous Unit Ideas begins with, “In our previous Cup Design Unit, we developed some useful ways to represent what was happening to the matter and energy in a system. Let’s recall what those were, so we can figure out if they could help us explain what caused some of the changes happening outside in the videos’ precipitation events. Discuss these ideas with a partner:
    - How did we represent the particles that make up different states of matter in a gas, a liquid, and a solid?
    - How did we represent the different ways that energy can be transferred into and out of a system like a cup with liquid in it?”
- Unit 6, "Setting the Stage for Learning,” points to prerequisite lessons, but a practice piece is not included.
- In Lesson 6.4.01, materials provide suggested prompts for teachers to activate students’ prior knowledge.
- In the “Putting Pieces Together” section of each unit, teachers review previous units and preview upcoming concepts at the start of each new unit. Students take the pieces of ideas they have developed across multiple lessons and figure out how they can be connected to account for the phenomenon the class is working on.

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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.

The 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. Materials include standards correlations, including cross-content standards, that explain the standards within the context of the grade level. Materials include a comprehensive list of all equipment and supplies needed to support instructional activities. Materials include guidance for safety practices, including the grade-appropriate use of safety equipment during investigations.

Evidence includes but is not limited to:

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

- The *Teacher Handbook* gives instructions for developing and using science and engineering practices (SEPs), crosscutting concepts (CCCs), and anchoring phenomena.
- The *Teacher Handbook* provides overviews of features of the OpenSciEd units. It includes assessment guides, lesson implementation guides, and progress monitoring guides.
- Teachers are provided with editable lesson resources, including lab instructions, keys and rubrics, and example questions to ask at particular points in the lesson and example student responses.
- At the beginning of each lesson, teachers begin with “What Students Will Do,” then continue into the Lesson Learning Plan Snapshot, which reviews the summary and materials needed per student, per group, and per class.
- In Materials Preparation, teachers are provided with embedded technology, research-based instructional strategies, and scaffolds to enhance student learning.

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

- The *Teacher Handbook* gives instructions for developing and using science and engineering practices, crosscutting concepts, and anchoring phenomena. On the presentation slides that teachers use for planning, charts are included that outline alignment to Science and Engineering Practices (SEPs) and Crosscutting Concepts (CCCs) Alignment.
- The Teacher Background Knowledge in Unit 6.9 includes a flowchart that shows what cross-content standards are taught and where they build on other units.
- The TEKS alignment document pairs TEKS 7.11 on the effects of human activity on watersheds with sixth-grade Unit 6, which explores "How changes in Earth's systems impact our communities and what we can do about it."

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

- At the beginning of each lesson within a unit, there is a Lesson 1 Learning Plan Snapshot. The Snapshot contains a pacing guide for the lesson and what materials are needed for every activity. This includes videos, diagrams, charts, equipment, and supplies for every part of the lesson.
- Each lesson provides teachers with a materials list that indicates the items needed for each part of the lesson. This list also indicates whether materials should be provided per student, per group, or per class.
- The materials lists include links to vendors of needed items for each grade unit.

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

- In the *Teacher Handbook* in Section O, there is a section about Lab Safety for Science Investigations. It indicates that teachers should follow these lab safety recommendations for any lesson with an investigation. There is a list of seven safety recommendations.
- The Teacher Guide for each lesson guides teachers on how to deal with safety practices for the grade-appropriate use of equipment during the investigation.
- For example, at the beginning of Unit 9, there is a document titled "Teacher Background Knowledge," in which teachers are encouraged to adopt and practice appropriate safety practices during science investigations. A list of safety recommendations is also provided on this page.

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Indicator 8.3

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

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

Meets | Score 2/2

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

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

Evidence includes but is not limited to:

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

- Each unit begins with a Learning Plan Snapshot for each lesson. It includes prior knowledge, present objectives, and what the next lesson will entail.
- There is a timeline in the Lesson Plan Snapshot that details how many parts are in the lesson, the duration, a summary of each activity, any slides location, and materials needed.
- The Unit Storyline maps out each lesson within the unit and how many days and minutes it will take to complete the 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.

- In Unit Storylines, teachers are guided through each lesson with a sequence of activities designed as a journey to exploring phenomena that defy easy explanation.
- All phenomena are carefully selected to anchor the Unit Storyline and develop targeted disciplinary core ideas, crosscutting concepts, and science and engineering practices.
- Every lesson has a question to investigate using anchoring phenomena, crosscutting concepts, and science and engineering practices. For example, in Unit 6.2, Thermal Energy, the unit question is, “How can containers keep stuff from warming up or cooling down?”

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

- Each class/lesson is outlined in the Lesson Learning Plan Snapshot and is approximately 45–50 minutes long. The number of classes needed to complete all sixth-grade units is 201 class days.

- In the Teacher Background Knowledge document, teachers can view ways to adjust units for time constraints if needed. Teachers can also access options to shorten or condense parts of the unit without eliminating important sensemaking for students. On the presentation slides teachers use for planning, notes for, “How do I shorten or condense the unit if needed? How can I extend the unit if needed?” are included.
- The Middle School Scope and Sequence document explains how each unit builds on what students have developed in prior units and how crosscutting concepts (CCCs) and science and engineering practices (SEPs) build coherently across the program.

Kiddom OpenSciEd Grade 6

Indicator 9.1

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

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

Not Scored

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

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

Evidence includes but is not limited to:

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

- Materials are designed with clear, designated places for important information for teachers.
    - For example, in Unit 6.3, Lesson 1, Teacher guides are designed in a way that teachers can locate important information easily for planning and implementation. Materials include digital links to previous lessons and important information to guide within the lessons and use boxes and tabbed pages to easily identify important information.
    - For example, each unit has a storyline. A storyline is a lesson-by-lesson summary of the unit with the lesson question, phenomena or design problem, what students do and figure out, and how to navigate to the following lesson.
- Materials include an appropriate amount of white space and a design that supports and does not distract from student learning.
    - For example, in Unit 6.3, Lesson 1, Day 3, students compare models per the instructions on the assignment sheet. The assignment sheet includes a clear main subject, and the content is organized in a logical progression.
    - For example, in Unit 6.2, Lesson 1, Day 3, the students set up a test and fill out a data table. The activity sheet has a clear main topic. The content is organized in a logical progression, then compares models per the instructions on the assignment sheet. The assignment sheet includes a clear main subject, and the content is organized in a logical progression.
- Student materials are appropriately designed to support student learning. Examples include a clear main subject, topic, or purpose; prominent and clear titles and headings; and subheadings that clearly mark sections.

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

- Materials consistently embed age-appropriate pictures and graphics that support student learning and engagement without being visually distracting.
    - For example, in Unit 3, Lesson 10, students create a thunderstorm by dragging a digital slider. Background graphics change as weather conditions change as they are manipulated by the student.
    - For example, in Unit 3, Lesson 4, students draw and write about what they think they'd see when they collect temperature and sunlight data outside. Students are provided with a photo of an outdoor scene in order to make notes about different ground and air temperatures.
    - For example, the digital materials embed age-appropriate videos for all students to have a deeper understanding of lessons. These videos have links for teachers to enhance language with subtitles and the ability to pause for clarification
- Materials provide images in lessons that are authentic photos as well as clearly labeled diagrams to enhance student and teacher guidance. For example, a picture of Mt. Everest is used to enhance students' visualization for those who have never seen one or for the ELL students to make a connection.

Materials include digital components that are free of technical errors.

- Materials include digital components that are consistently free of technical errors.
    - For example, in Unit 6.1, teacher resources are free of spelling, grammar, and punctuation errors.
    - For Example, in Unit 6.2, teacher resources are free of inaccurate answer keys on worksheets and assessments.
    - For example, in Unit 3, Lesson 10, students are asked to create a thunderstorm by dragging a digital slider. Background graphics change as weather conditions change while they are manipulated by the student. Materials are free of inaccurate content materials or information.
    - For example, the reading passage assigned in Unit 4, Lesson 1, is free of spelling, grammar, and punctuation errors.

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Indicator 9.2

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

1	Materials integrate digital technology and tools that support student learning and engagement.	Yes
2	Materials integrate digital technology in ways that support student engagement with the science and engineering practices, recurring themes and concepts, and grade-level content.	Yes
3	Materials integrate digital technology that provides opportunities for teachers and/or students to collaborate.	Yes
4	Materials integrate digital technology that is compatible with a variety of learning management systems.	Yes

Not Scored

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

Materials integrate digital technology and tools that support student learning and engagement. Materials integrate digital technology in ways that support student engagement with the science and engineering practices, recurring themes and concepts, and grade-level content. Materials integrate digital technology that provides opportunities for teachers and/or students to collaborate. Materials 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 integrate digital technology and tools that support learning through teacher guidance for using investigations, videos, interactives, and related activities to support student learning.
    - For example, in Unit 6.1, Lesson 1, there is a materials preparation section in the teacher guide that provides guidance and pacing instructions for embedded video clips, investigations, and instructional activities.
    - For example, in Unit 6.2, Lesson 11, students complete a heating and cooling liquid simulation. Students use computer models to make sense of things that are not observable. Students use online interactive simulations to collect data to figure out the relationship between the temperature of a sample of matter and the kinetic energy of the particles that make up the sample.
- Materials provide guidance for integrating embedded technology within materials as well as tools outside of the materials.
    - For example, grades 6–8 have the option of using a digital notebook if the teacher chooses.
    - For example, in Unit 6.1.06, students complete a graphic organizer in their science notebooks while watching the video and answer the question, “What happens to light after it enters the student’s eyes so that the student can see himself?”

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

- Materials provide digital tools for students to engage with recurring themes and concepts.
    - For example, in Lesson 6.7, Earth and Space, students use simulations to look for patterns of objects over time to induce the Sun, Earth, and Moon.
    - For example, in Unit 6.3, Lesson 1, students watch three different hail videos and compare and contrast their observations about the phenomenon.
- Materials integrate digital technology in ways that support student engagement with science and engineering practices and grade-level content.
    - For example, in Unit 6.1.05, students revisit the phenomena by viewing a video of light behavior before modeling how light determines how objects are seen.
    - For example, in Unit 6, Lesson 6, students use a virtual microscope to investigate pre-prepared slides of human skin, bone, and muscle. Then, they use the observational data to come to a consensus about how cells' unique structures support their functions in the body.
- Materials provide opportunities for students to obtain, evaluate, and communicate information using digital tools.
    - For example, in Unit 6.1, Lesson 1, students play the mirror-window video and add their ideas to their Notice and Wonder chart.
    - For example, in Unit 6.9, Lesson 8, materials integrate an online interactive simulation titled "Orangutan Energy Model 1." Students manipulate food availability and gather data interactively, which is later analyzed to meet the learning objective.
    - For example, in Unit 6.9, Lesson 9, materials integrate an online interactive simulation titled "Orangutan Energy Model." Students manipulate the orangutan population and gather data interactively, which is later analyzed to meet the learning objective.

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

- Materials integrate digital technology that supports teacher-to-student collaboration.
    - For example, in Unit 6, Lesson 9, the teacher shows students a video and microscopic images of cells growing and splitting in different organisms. By observing this process at different spatial (zoomed-in/out video and images) and time scales (full/half-speed video), students make sense of how their body fills a gap at the site of an injury, such as broken skin or bone.
    - For example, in Unit 6, Lesson 14, students are asked to consider, "Materials integrate digital technology that supports teacher-to-student collaboration." The teacher shows students various videos of people recovering from injury and facilitates a discussion about the student's function before and after the injury.
- Materials integrate digital technology that supports student-to-student collaboration.
    - For example, in Unit 6.2 in Building Understanding Discussion, students work together in small groups/pairs to discuss their findings from their investigation.
    - For example, in Unit 6.1, Lesson 6, students view a video of how light reacts with a lens. They then work with the class to make sense of what was observed and collaboratively develop a model on chart paper.

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

- According to the Middle School Program Overview, materials are available free on their website. They can be viewed or downloaded as PDF files or Google Docs to view or copy. The videos, interactive models, and other assets needed for each unit are also available on the website.
- Digital materials are accessible and compatible with multiple operating systems and devices. According to the Design Specifications, instructional materials assume that every classroom has a dedicated computer that can project on a screen or has a display that is large enough for the entire class to see and has an internet connection that is fast enough to support video streaming. The instructional materials may call for interactive use of computers by students in a ratio of two students per computer, as long as those activities can also be done as a whole class on the dedicated classroom computer.
- Digital materials are accessible and compatible with multiple operating systems and devices and learning management systems. For example, the materials are accessible and compatible with Chromebooks, PCs, iPads, Apple computers, and smartphones.
    - For example, the materials state, “[The publisher] offers science curriculum by OpenSciEd, curricula that promotes learning through discovery on a dynamic digital platform.”
    - For example, the Remote Learning Online Tool Organizer is a list of online tools that focuses on how to use the storyline instructionally when teaching remotely.

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Indicator 9.3

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

1	Digital technology and online components are developmentally appropriate for the grade level and align with the scope and approach to science knowledge and skills progression.	Yes
2	Materials provide teacher guidance for the use of embedded technology to support and enhance student learning.	Yes
3	Materials are available to parents and caregivers to support student engagement with digital technology and online components.	Yes

Not Scored

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

Digital technology and online components are developmentally and grade-level appropriate and sometimes provide support for learning. Materials provide teacher guidance for the use of embedded technology to support and enhance student learning. Materials are available to parents and caregivers to support student engagement with digital technology and online components.

Evidence includes but is not limited to:

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

- Grades 6–8 materials provide information that identifies how digital technology and online components are aligned with the grade-level scope and approach to science knowledge and skills progressions. Materials include a digital teacher guide with live hyperlinks to the other online resources to facilitate planning and make it easy to use.
    - For example, in Unit 6.1, there is a teacher's guide that begins every lesson and explains how to plan out the lesson and how student knowledge and skills will progress throughout the lesson.
- The digital technology and online components are developmentally appropriate for the grade level.
    - For example, in Unit 6.1, there are explanations for the video clips and other digital materials in the teacher's guide for each lesson.
    - For example, in Lesson 1 of Unit 3, students observe three video clips of hail falling in different areas of the United States on different days. Students record their observations, evidence, and ideas to share with the classroom community. Materials direct teachers to give students an additional minute to record their notes on their charts.
    - For example, in Unit 6, Lesson 6, students watch a video about how the eyes work. and are asked to consider, “What happens to light after it enters the student’s eyes so that the student can see himself?”

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

- Materials provide specific teacher guidance for embedding the technology within lessons and assessments.
    - For example, grades 6–8 unit storylines and lesson plan snapshots provide recommendations for teachers on which days to use technology with students and if there is a time during lessons when the technology would enhance or support student learning. Materials outline recommendations in the unit, week, and daily lesson overview pages.
    - For example, in Unit 7, Lesson 1, teachers are directed to group students to use a jigsaw strategy with a series of podcasts to learn about ways that humans across cultures and throughout time have relied on and made connections to the sky, and they identify additional patterns. Materials direct teachers to test the podcasts ahead of time and decide how students will listen to them in small groups. Materials also suggest that If students play the podcast directly from YouTube, they can turn on closed captioning.
    - For example, Unit 6.2 provides a teacher's guide for each lesson that references available technologies that enhance the lesson. The links are included in the guide for the teachers.

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

- Within the Course Unit Storylines and Teacher Guides activities, an activity can be assigned by teachers to share with parents and caregivers the technology that will be utilized throughout the course. The information includes a link to a video library for access to videos in each unit of the course. Parents can view a library of the simulations that will be used in each unit as well.
- The following is a direct quote of text included in the caregiver technology information page, “Students will interact with multiple forms of media throughout the course. Simulations and data visualization tools will enable students to create and refine models of their ideas of key scientific phenomena. Embedded engineering practices in units focused on problem-solving and technology emphasize that there is not always one right answer. When having conversations about science, you can encourage your child’s curiosity through talking about their own noticings and wonderings from the technology that they utilize in class. When supporting your students’ use of technology, hold off on providing answers right away for your child; we want students to make progress on their own questions and to think of ways to make sense of what’s around them.”
- Materials provide a Unit Storyline for parents and caregivers on how to support students.
    - For example, in Unit 6.2, there is a Unit Storyline that indicates the overall Unit question, the lesson question, phenomena or design problem, what students will do and figure out, and how they will represent it.
    - For example, Unit 9 begins with a lesson-by-lesson summary of the unit with the lesson question, phenomena or design problem, what students do and figure out, and how they navigate to the following lesson. Teachers may choose to send this home with students at the beginning of a unit to share with parents.