PASCO SCIENTIFIC Essential Physics

PASCO SCIENTIFIC Essential Physics Executive Summary

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

TEKS Student %	TEKS Teacher %	ELPS Student %	ELPS Teacher %
91.49%	91.49%	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 some 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 somewhat promote students' use of evidence to develop, communicate, and evaluate explanations and solutions.
- The materials provide some teacher guidance to support student reasoning and communication skills.

Section 6. Progress Monitoring

- The materials include some TEKS-aligned and developmentally appropriate assessment tools.
- The materials include some guidance that explains how to analyze and respond to data from assessment tools.
- The assessments are somewhat clear and easy to understand.

Section 7. Supports for All Learners

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

Section 8. Implementation Supports

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

Section 9. Design Features

- The visual design of materials is clear and easy to understand.
- The materials are mostly designed to engage and support student learning with the integration of digital technology.
- The digital technology or online components are mostly 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 and course-level content as outlined in the TEKS.

1	Materials provide multiple opportunities for students to develop, practice, and demonstrate mastery of appropriate scientific and engineering practices as outlined in the TEKS.	M
2	Materials strategically and systematically develop students' content knowledge and skills as appropriate for the concept and grade level or course as outlined in the TEKS.	M
3	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 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 and course-level content as outlined in the TEKS.

Materials provide multiple opportunities for students to develop, practice, and demonstrate mastery of appropriate scientific and engineering practices as outlined in the TEKS. Materials strategically and systematically develop students' content knowledge and skills as appropriate for the concept and grade level or course 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 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 appropriate scientific and engineering practices as outlined in the TEKS.

- Students have multiple opportunities to show mastery of grade-appropriate scientific and engineering practices as found in the table of contents under the Engineering Connections button on the home screen of the textbook. For example, students have the opportunity to develop a solar power array for the roof of a house that meets certain criteria.
- Pasco Essential Physics shows evidence of course-level content with the engineering lab in Chapter 12.4. The Design a Wind Turbine lesson is TEKS-aligned and focuses on all aspects of the scientific method, ensuring student engagement. Likewise, Chapter 21.1, Investigation 21A: Reflection of Light, exhibits a focus on scientific and engineering processes and an emphasis on activities that reflect grade-level TEKS.
- In Lesson 3, for the Design a Rube Goldberg Machine experiment, students build a prototype of a Rube Goldberg Machine in groups. Students test their machines and document the machine's performance, which can include taking a video. Teachers guide students to evaluate their performance by writing down their thoughts and then implementing their revisions.
- In Chapter 17, students read about circuits, then build circuits, and finally use equations to solve problems, giving them plenty of practice and chances to develop their skills as outlined in TEKS

6D. Throughout each unit, questions listed on the bottom of each page under assessment help students practice their knowledge of the content.

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

- The Pasco Essential Physics lesson plan Kepler's Laws and Planets strategically and systematically develops students' content knowledge and skills in the lesson with the use of prior student knowledge, scaffolding prior TEKS into grade-level content, and differentiated instruction. Chapter 10.1, Conservation of Energy, presents grade-level content with distinct descriptions of open and closed systems, visual images, formulas, and a brief summative assessment.
- At the beginning of the school year, the teacher introduces the topic of position and displacement via classroom discussion and inquiry. In Chapter 3, Lesson Plan for Position and Displacement, the teacher introduces the topic through student activities that teach students how to identify positions on a grid. Lesson 5 in Chapter 3 guides the teacher in introducing position and displacement. Since students have built a strong foundation, they are able to analyze phenomena on position versus time graphs.
- The lesson plan in Chapter 6 systematically develops students' content knowledge and skills by identifying the prior knowledge a student should have about vector and scalar quantities and their use for motion along a line. This gives students the background knowledge to use vector diagrams to interpret the relationships among vector quantities, including force and acceleration, and use mathematical and graphical vector addition to make predictions and solve problems involving vector quantities.
- In Chapter 15, the unit progresses from definitions to an introductory lab experiment where students investigate waves and wave properties. Next, students use their knowledge of waves to learn about wave velocity and calculate wave velocity, which matches TEKS 8A and 8C.

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 develop an understanding of science concepts.

- Materials include sufficient opportunities for students to ask questions and plan and conduct classroom, laboratory, and field investigations to engage in problem-solving to develop an understanding of science concepts by challenging students with a variety of design projects in the Engineering Connections tab. Design projects include but are not limited to designing a solar-powered car, designing a crash barrier, and designing a wind turbine power plant.
- In Investigation 4A, students perform a laboratory experiment about acceleration. During this experiment, they ask questions, plan an experiment, analyze questions about the experiment, and apply what they learn to a more advanced scenario to show their understanding of acceleration.
- The materials include lesson plans that explain, describe, and make connections between the SEPs and the development of conceptual understanding. For example, in Chapter 3, Lesson 4, Working with Equations for Speed and Velocity, students engage in a teacher-led class discussion about what it means for two things to be mathematically equal. The lesson plan then guides the teacher to "Set up a pan balance containing equal numbers of pennies on each side. Demonstrate that it only remains in balance when you make equal changes to both sides."

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- Chapter 11.3, Collisions in Two Dimensions lab, details a collision, asks a question, gives details on calculations, provides step-by-step instructions, and walks through problems to reach a final solution.

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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 and course-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 and course-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 and course-level content as outlined in the TEKS.

- The materials embed phenomena across lessons to support students by beginning chapters with visual and textual phenomena. For example, Chapter 5: Forces and Newton's Laws begins with a phenomenon about sailing ships.
- In Lesson 4, Investigation 5A: Newton's Second Law, students are asked, "How is an object's acceleration related to the net force acting on the object?" Because the students have been studying motion and forces, they would use Newton's Second Law to explain an object's acceleration when it has a net force acting on it.
- Chapter 12.2, Combining Pulleys, uses real-world phenomena in the visual examples and descriptions, and the instructions are present, clearly defined, and testable. Also, Chapter 1.3 Technology exhibits relatable and concrete examples of phenomena in the use of the smartphone to explain all aspects of physics in 11 clear examples in a side-by-side chart.
- In the Chapter Review section of Chapter 5, students have opportunities to practice real-world problems. In Chapter 5, under the Engineering tab, there are several topics listed showing how the content relates to different science and engineering practices.

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

- Chapter 1.2 uses the scientific method and Galileo's evidence from his use of a telescope to access students' prior knowledge while reinforcing the importance of the scientific method. Chapter 5, Forces and Newton's Laws, Lesson 3 intentionally leverages a student's prior knowledge and experience by showing that objects in motion will slow down and eventually stop unless they are pushed or pulled constantly.
- The Chapter 5.3 lesson plan on Hooke's Law revisits students' prior knowledge of force, displacement, and Newton's Third Law. The Chapter 11 summary lists questions about things that students should have seen before, such as crumple zones, airbags, rocket propulsion, and pool balls. At the beginning of Chapter 3, Position and Velocity, the introductory paragraph mentions several different examples of position and velocity, including a phone's GPS to bring in students' prior knowledge.
- In Chapter 8.2, Lesson 4, Structures and Design, the teacher begins the lesson by introducing the Tacoma Narrows Bridge Collapse. The video allows students to leverage their knowledge about tension and equilibrium to discuss the safety failures of the Tacoma Bridge. It also guides students through the bridge design project. This is followed by an overview of the characteristics of specific design elements, such as ropes and beams, and the reaction forces they apply. The Investigation section states, "Students are challenged to design a suspension bridge using an interactive simulation. Students optimize the design parameters for the tower and cables to avoid exceeding the safety factors for compression and tension while supporting a known load of cars and trucks."

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

- A section In the lesson plans titled Learning Objectives allows teachers to identify the goals behind each lesson. Chapter 8.2, Investigation 8B: Structural Design includes a yellow teacher information section, Present Key Content, which lists specific learning goals for the Design a Bridge Challenge
- The lesson summary in Chapter 5, Forces and Newton's Laws, Lesson 3, clearly outlines the scientific concepts and goals behind the phenomenon. The Lesson summary breaks down Newton's 1st Law of Motion into smaller sections and clarifies the paradox by asking how it could be true when all real objects slow down and stop unless a continuous force is applied.
- In Chapter 5, under the Chapter Study Guide, a summary lists the learning objects, investigations, vocabulary, and important relationships to give the teachers an outline of the goals for the unit.
- Chapter 1.3 Design Project: Solar Power sets and defines clear goals for a student to gather solar power for a predetermined location that generates money and ultimately delivers a substantial amount of energy per day.

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Indicator 3.1

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

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

Evidence includes but is not limited to:

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

- The materials connect new learning to previous and future learning goals. For example, the first lesson of the curriculum, "The Science of Physics," introduces the first 10 chapters of the textbook.
- In the Chapter 15 Lesson Plan, the materials connect their knowledge and skills within and across units. The prior knowledge, equations, and cross-cutting concepts all play roles in this process. For example, in Lesson 1, students define waves using an interactive simulation; in Lesson 2, students use a ripple tank simulation to investigate wave propagation; and in Lesson 4, students examine wave properties in various media using an interactive simulation.
- The Chapter 23 Summary Guide includes a detailed summary and learning objectives that connect knowledge and skills within the unit.
- In Chapter 13, several questions use terms, concepts, and equations from previous units. In the second lesson of Chapter 13, Angular Momentum, the text reminds students they have previously learned about momentum in a previous unit and shows what page the concepts are carried over from one unit to another.
- The Standard Correlations to Content and Assessment illustrates the connection of concepts across units by providing the location of each standard in the textbook and a direct link. For example, TEKS-1.B.i can be found in Chapters 21.2, 1.3, 17.3, and 18.2.

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

- The Chapter 24 Lesson Plan shows evidence of scaffolded learning as students are expected to know material identified in Prior Knowledge and Standards. For example, in Chapter 24, Lesson 3, the slideshow that accompanies the lesson Combining the Process of Heat Transfer presents scaffolding of older TEKS and leads to higher rigor for students.
- The chapters are chunked into smaller units to help teachers and students see what topics go together to help students learn one concept and then go deeper into the material in the following chapters. For example, in Chapter 7, the materials start with definitions and a simple equation of angular velocity, and a question at the bottom of the page for students to answer. It then includes a lab investigation for students to further explore their angular velocity knowledge.
- In Chapter 4: Acceleration, the materials are intentionally sequenced to include a progression from concrete, to representational, to abstract thinking by starting with acceleration on ramps, moving on to models of accelerated motion, and ending the chapter with gravity and free-fall. In Chapter 5: Forces and Newton's Laws, Lesson 1 activates prior knowledge of forces by tying in physics to the idea of force and the understanding students already have of the words push and pull.
- Scaffolding is evident in Chapter 15, Match A Wave's Properties activity. Students use a simulation to create models of waves and match them to the corresponding water wave that is shaded blue. After answering a series of questions about the simulation, students build on their observations of basic waveforms to learn about transverse and longitudinal waves. Students then work with slinkies and a partner to create the two different types of waveforms and answer questions regarding their characteristics.

Materials clearly and accurately present course-specific core concepts and science and engineering practices.

- The Engineering tab at the top of the website lists different engineering-based lab experiments listed for each unit to give students plenty of opportunities to use science and engineering practices. The end of each chapter has review questions grouped in different sections titled Vocabulary, Conceptual, and Quantitative to give students a chance to show their knowledge of physics concepts.
- Investigation 19A: Building an Electromagnet clearly and accurately presents course-specific core concepts and science and engineering practices by presenting the essential question, describing the desired actions and materials for students, and presenting the outcome that closes the activity. Chapter 19.1 Electric Motors relies heavily on course-specific materials in the lesson to present key content, assess the content, and demonstrate the modeling of a basic motor operating system.
- The Engineering tab has categorized lists of Engineering Connections with their corresponding chapter title. For example, in Chapter 5.3, the engineering connection is about Elasticity and Brittleness. The lesson presents a generalized description of material being stretched and a diagram exaggerating the effect of a heavy object placed on a desk to assist student understanding of Hooke's Law and how it is used in real-world applications.
- Science and engineering practices are clearly and accurately presented in course-specific core concepts. When clicking on the engineering tab in each chapter, the text is highlighted that

corresponds to science and engineering practices. For example, Chapter 5: Forces and Newton's Laws has five engineering connections.

Mastery requirements of the materials are within the boundaries of the main concepts of the course.

- Each lesson plan includes a section in the table at the bottom titled Standards. The materials provide a one or two-sentence standard for what students are expected to learn in the lesson. For example, in Chapter 4, the standard for the lesson involves students analyzing motion using equations involving acceleration. Below the Standards section, the section titled Crosscutting Concepts highlights one of the seven core concepts found in physics, like Stability and Change, for this lesson.
- TEKS 5.E.i in the Pasco Essential Physics Correlation Chart exhibits mastery requirements of the materials within the boundaries of the course by engaging students in the lesson, the assessment, and the Technology Enhanced Assessment.
- The materials provide learning objectives for each chapter and lesson within a unit. They clearly define the boundaries of content that students must master through the course. The Lesson Plan document clearly defines the standards for what the student must master for each lesson. For example, in the Force and Weight lesson plan, the standards for mastery include that the student must be able to express relationships among physical variables quantitatively, including the use of equations.
- The Lesson Plan for Chapter 7 provides a list of objectives for the unit. Further down on the lesson plan, the section Assessment Evidence relists the objective and gives example student responses to show they have mastered that objective. In the assessment questions for Chapter 15: Waves, three different levels of difficulty for questions line up with the learning objectives posted at the beginning of the chapter.

Indicator 3.2

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

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

Partial Meets | Score 3/6

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

Materials support teachers in understanding the vertical alignment of course-appropriate prior knowledge and skills guiding the development of course-level content and scientific and engineering practices. Materials contain explanations and examples of science concepts, including some course-level misconceptions to support the teacher's subject knowledge and recognition of barriers to student conceptual development as outlined in the TEKS. Materials do not 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 vertical alignment of course-appropriate prior knowledge and skills guiding the development of course-level content and scientific and engineering practices.

- The materials include guidance such as the lesson planning document that supports teachers' understanding of how new learning connects to previous learning across the course. For example, in Chapter 4: Acceleration, Lesson 1, the lesson plan highlights the prior knowledge of students needing familiarity with the concept of velocity and the use of the Greek letter *delta* to mean "change in."
- Lesson Plans include a section titled Prior Knowledge, which briefly describes what students should be familiar with before beginning the lesson. For example, in the Chapter 6 Lesson Plan for Friction, students should have knowledge of the kinematic equations and Newton's Laws. Also, the Chapter 6 Lesson Plan has a section titled Crosscutting Concepts with clearly identified objectives that have occurred in previous units.
- The Engineering tab for Chapter 11 includes a laboratory experiment called Design a Crash Barrier. On the side of the lab description, sections include a lesson summary, ways to modify the lab, present key content, materials, and a summary of what the students do in the lab, which helps teachers with course content and scientific engineering practices.
- Chapter 1.3 Design Project: Solar Panel exhibits vertical alignment of course-appropriate prior knowledge and skills guiding the development of content and scientific and engineering

practices by revisiting the law of thermodynamics, the law of conservation of energy, and full use of the scientific method throughout the project. The project also includes tools such as a video and a lesson at the end that increases the rigor of the lesson.

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

- The sidebar of the teacher textbook explains science concepts to support the teacher's subject knowledge. For example, the lesson summary in the sidebar for Circular Motion in Chapter 7 explains what linear and angular velocities are and their corresponding units.
- The Chapter 4.1 Acceleration lesson has questions and scenarios that could be used for student misconceptions, but no clear evidence shows how it should be interpreted. Chapter 20.1 Properties of Light minimally exhibits misconceptions depending on the level and tenure of the teacher reading the questions and their knowledge of the TEKS.
- In Chapter 2.1: Inertia, Weight, and Mass, the teacher's yellow sidebar includes language support recommendations. Materials provide guidance for teachers to help students understand inertia without addressing misconceptions. In the Teacher Sidebar in Chapter 5.3, Generalization of Hooke's Law, teachers are provided with a few paragraphs clarifying misconceptions regarding Hooke's Law in real life. The section is labeled Present Key Content, and they follow along with the slideshow that is provided in the teacher sidebar.
- Chapter 5 includes questions on the side of the text to guide the teacher's understanding of student misconceptions that occur. In Lesson 1, the text asks the question, "Are weight and mass the same thing?" which is a student misconception teachers often address.

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

- The materials include The Essential Physics User's Guide under the Help menu, which explains the organization and features of the resource but does not include the rationale for the program's instructional design.
- The materials offer fully editable lesson plans that cover 100% of the program's core content but do not explain the lesson design's intent and purpose.
- The materials include a Chapter Study Guide at the beginning of each chapter which previews the chapter and lists the learning objectives. For example, the Chapter 1 Study Guide includes a listing of the chapter summary, the learning objectives, and a comprehensive index of every item involved in the unit. In the Chapter 24 Chapter Study Guide, a detailed chapter summary describes the main concepts of the chapter. It also includes a bulleted list of learning objectives and the investigations that will be completed in the chapter. Chapter 2.2 has a section titled Language that explains why the presentation uses diagrams and pictures to distinguish between the words *accuracy* and *precision*. However, the Study Guides do not explain the purpose or rationale for the structure and design of the chapters.
- At the beginning of the book, under Guide for Teachers, a page called Features of the Curriculum outlines all of the resources available in the textbook and where they can be found. Also, In the beginning of each chapter, a Chapter Study Guide includes a chapter summary, learning objects, a list of investigations, important relationships (equations), vocabulary, and a chapter index to guide teachers in the design of the chapter. This guide does not mention the intent and purpose of the instructional design of the HS Physics program.

PASCO SCIENTIFIC Essential Physics

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 course-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 course-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.

- The materials consistently support sensemaking through reading. For example, each lesson in every chapter has an assigned reading for students that guides them through conceptualizing the definition, understanding the units, and applying it. They consistently support sensemaking through acting and thinking like scientists and engineers. Under the Engineering tab for Chapter 4: Acceleration, two separate reading passages address thinking like a scientist and engineer in relation to terminal velocity and testing the physical fitness of astronauts.
- In Investigation: 4A Acceleration, the students display meaningful sensemaking through reading, writing, thinking, and acting as scientists in all of the steps of the lab. Investigation 7B: Orbits presents an essential question, and an investigation allows the student to use every aspect of the scientific method to display their ability to act as a scientist.

- In Chapter 6: Motion in Two and Three Dimensions, students participate in maze navigation and interact with a simulation working with vectors to solve a maze. After students complete the maze, they answer the question about what number of vectors they used to solve the maze. They also make inferences about their results with writing. Finally, students will use the information gained to answer mathematical-based questions about vectors.
- In Chapter 8, students read about static equilibrium, answer questions about how to start problems in static equilibrium, solve problems about static equilibrium, and perform lab experiment 8A about static equilibrium using both qualitative (writing) and quantitative questions. In the Chapter 24 Study Guide, students read, write, and solve problems to show their knowledge about heat transfer.

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

- The materials include a lesson on free-fall acceleration and gravity where students gather evidence through a reading assignment, demonstration, mini-lab activity, and then produce a graph to develop their understanding. Chapter 4: Acceleration introduces the vocabulary of velocity, terminal velocity, free-fall, and acceleration prior to students engaging in a reaction activity involving a ruler.
- In Question 25 of the Chapter 7.2 review, students research the history of the law of universal gravitation on the internet or in the library. After completing their research, the students prepare an oral report with the materials defining specific vocabulary and what information to include in the presentation.
- In Chapter 9, Lesson 4, over gravitational potential energy, the lesson plan includes a group demonstration where students discuss potential energy and read about it from the text. Throughout Chapter 4, students read the material text, which is aligned with the TEKS for work and energy.
- The Chapter 12 Machines Chapter Summary clearly exhibits grade-level appropriate scientific texts that allow the student to engage and gather an understanding of the desired TEKS. Chapter 12, Lesson 1 presents grade-level appropriate text designed in chunks that build up to the student's full understanding of the concept. For example, the unit begins with an overview of the six types of simple machines and then develops the concept with applications of mechanical advantage and the use of levers.

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

- In the reaction time activity for free-fall acceleration and gravity in Chapter 4: Acceleration, students get multiple opportunities to engage in various written and graphic modes of communication to support the development and display understanding of the concept. For example, students have to write out full-sentence responses to various questions and then graph the data they gathered during the activity.
- In Investigation 6D: Graphing Motion on an Inclined Plane (alternative to 6C), students look at images of graphs and describe the shapes in words to help their understanding of "What is the acceleration of an object down an inclined plane? What do the motion graphs of an object down an inclined plane look like?" Students use a table and graph, then graph their collected data.

Then students draw a free-body diagram of a box on a frictionless inclined plane which applies new skills learned in Chapter 6.

- The Student Notes in Chapter 12, Unit 1 exhibit multiple chances for students to engage in written and graphic modes of communication and the means of problems and charts. The Student work in Chapter 12 Investigation: Levers displays multiple chances for students to express themselves in writing or graphic modes and demonstrate their understanding of the desired content.
- The materials provide opportunities for students to draw, create, and interpret different written and graphic questions and pictures to develop conceptual understanding. For example, throughout Chapter 18, students draw, interpret and create magnetic fields using both simulations and iron filings to develop their understanding of magnetism.

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.

- The materials create opportunities for students to take what they have learned and apply it to new situations. For example, in the lab activity for Hooke's Law, students transfer the knowledge they gained about the concept of Hooke's Law and apply it to different scenarios, such as knowing what would have a higher spring constant based on the material described.
- In the Engineering tab, Lesson 2, Design a Pinhole Camera, students build a pinhole camera that can produce a single image of the sun. Students build prototypes to test their cameras and view pictures of different lights. Students then evaluate their devices through a series of probing questions. Lastly, students revise their design and test it by viewing an image of the sun.
- In Investigation 2B, the essential questions guide students through the scientific process of that investigation. Students have a set of directions and questions to work through as they complete the investigation giving them a chance to work and act like a scientist.
- Chapter 12.4, Design A Wind Turbine Power Plant, allows students to act as scientists and engineers by reading, engaging in interactive media, and solving problems. In this design challenge, students are given a set of criteria and are challenged to design a prototype, test and evaluate the prototype, and revise their wind turbine design based on their evaluation.

PASCO SCIENTIFIC Essential Physics

Indicator 5.1

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

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

Partial Meets | Score 2/4

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

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

- The materials do not clearly prompt students to use evidence to support their claim or hypothesis. For example, in Investigation 19C: Build a Paper Clip Motor, students make a prediction toward the end of the investigation and then use the equation F=ILB to explain the prediction. Students then test the prediction but only answer whether their prediction was correct. Students do not get a follow-up question asking them why or why not or to support their response with evidence.
- Investigation 20C: Image formation of curved mirrors presents some evidence of students receiving instructions to use evidence to support their claims. The students read the essential questions and follow each step of the investigation, adjust the lens and object according to instructions, document findings, and then answer follow-up questions to fully support their findings.

- Materials sometimes prompt students to use evidence to support their claims. For example, in Investigation 5A, the materials state, “How was the cart’s acceleration different when the applied net force was greater? Support your answer with data.”
- In Lab Investigation 4B: A model for accelerated motion, no evidence shows students being specifically prompted to use their evidence to support their hypotheses and claims. The questions in the lab ask students how they can tell the car is accelerating, or based on your results, what is the relationship between a velocity-time graph and the object's displacement? The questions ask students to look at their data but do not ask students to use it to support their claims when they write their answers.
- There is some guidance from the materials that prompt students to use evidence to support their claims. In Chapter 7.2, Part 1: Orbital Velocities of the Planets, students write a hypothesis about what planets will move faster versus slower. Students participate in an interactive simulation and answer the question, "Does this evidence support or contradict your hypothesis?" Students answer other questions like, "Do these data support your hypothesis?" but are not asked about evidence.

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

- The materials provide experiences with new concepts followed by opportunities to use the new vocabulary. For example, in Investigation 7A: Circular Motion, students investigate the concept of vector direction in a circular motion. Students work through several different simulations to understand the concept. While working through the simulation investigation, students are introduced to new vocabulary terms such as radial, tangential, and angular velocity.
- Chapter 8.1 rotational equilibrium presents readers with an embedded vocabulary experience in two places, and they are both able to be audible and also dictated in Espanol. This is vital for ELLs or students who may desire further enhancements.
- Students have opportunities to develop and utilize scientific vocabulary in Chapter 21.2. The embedded question in Lesson 3 has students test their knowledge of mirrors using vocabulary like a flat mirror, concave, convex, lens, real, and virtual images. Students have opportunities to develop and utilize scientific vocabulary in Chapter 21.2. After students learn the rules for drawing ray diagrams, students practice drawing and labeling ray diagrams for converging lenses.
- In Chapter 23, students have multiple opportunities to use and develop their scientific vocabulary. The slide presentation has assessment questions where students answer questions about the terms being taught, including temperature. It also includes Test Your Knowledge questions at the end of sections with pictures showing different temperature scales. Vocabulary questions at the end of the chapter help students learn about temperature and heat.

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

- The materials provide some opportunities for students to develop and engage in the practice of argumentation and discourse to support student development of content knowledge and skills. For example, students design a pinhole camera in Chapter 20, but no prompt is used to engage in the practice of argumentation and discourse. The design process provides questions that need to be addressed in determining the design but does not explicitly develop the practice of argumentation and discourse.

- Chapter 5 Lesson Plan has some evidence of students having multiple opportunities to engage in discourse and uses guiding questions to help them with how to do it. The beginning of the lesson plan uses whole group discussion with guiding questions to help students learn how to engage in discourse about forces and recall their previous knowledge to help support them in their learning. In the student work section, students work independently and then check their answers with another student. This, again, gives students the opportunity to engage in discourse but does not give guidance on how.
- Chapter 10.1 shows an example of some argumentative discourse in the reinforcement article Conserving Energy in Other Closed Systems. After the explanation of a closed system by the author, an example is presented in detail that mirrors the original example. No specific detail or instructions are provided for how students can engage in peer-to-peer discourse.
- Materials lack some opportunities and support for students to participate in argumentation and discourse to develop their content knowledge and skills. For example, in the Chapter 22.2 Lesson 2 summary, students are asked questions about descriptions, comparisons, radiation, and wave speed; however, there is no evidence of integration of student support for argumentation and discourse.

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

- The materials provide instruction for constructing and presenting written arguments to problems using evidence acquired from learning experiences. For example, in Investigation 20B: Reflection in a Plane Mirror, students investigate how and where an image forms in a mirror. After working through the investigations, students predict where an image will be located and why it will be located there.
- Investigation 22 Photoelectric effect guides students with an interactive simulation with specific instructions and five questions that follow after both sets of instructions. These questions can be expressed by writing them out, but they can also be verbalized as part of the lesson's check for understanding as well.
- In Investigation 7B, students are guided through the writing process, starting with a hypothesis, then testing it. After that, they use their evidence to state whether it supports their hypothesis on the orbital velocities of the planets.
- The materials also provide opportunities for students to justify explanations of phenomena and solutions to problems using current content knowledge. For example, in Chapter 1.3 Investigation 1C: RGB Color Matching, students "Analyze each visual representation and describe how each explains how different colors of light combine to create other colors." Another example in Investigation 11C: Elastic Collisions, has students justify whether the momentum and kinetic energy after the collision will remain the same, increase, or decrease.

PASCO SCIENTIFIC Essential Physics

Indicator 5.2

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

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

Partial Meets | Score 2/4

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

Materials provide some teacher guidance on anticipating student responses and the use of questioning to deepen student thinking. Materials do not include teacher guidance on how to scaffold and support students' development and use of scientific vocabulary in context. Materials do not provide teacher guidance on preparing for student discourse and supporting students in using evidence to construct written and verbal claims. Materials do not provide support and guide teachers in facilitating the sharing of students' thinking and finding solutions.

Evidence includes but is not limited to:

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

- The materials provide teachers with possible student responses to questions and tasks that support students during lessons. For example, the speaker notes for lesson 1, Chapter 5, address how students may respond to the concepts of force and weight. It addresses that students may think these are not related, especially in terms of gravity and weight. The speaker notes guide teachers on how to address this response.
- The materials provide some support to teachers to deepen student thinking through questioning. For example, the lesson plan for free-body diagrams found in Chapter 5 has a suggested question for the teacher to present during a whole-group discussion that is separate but builds off of the slide show. The question that the teacher is prompted to ask is, "How do you think engineers keep track of all of this information?". The correct response includes that they would use free-body diagrams to visualize and compute these forces. The materials did not provide teacher responses to possible student responses, including how to build on student thinking. For example, the materials do not provide teachers with a list of questions to help build on student thinking.
- Investigation 7A: Electricity & Circuits provides teacher guidance on anticipating student responses and the use of questioning to deepen student thinking. The Assessment question at the bottom right presents a scenario and several variables and questions the student on why or

why not the scenario has a viable outcome. The Test Your Knowledge question presents a question to students that is real-world correlated and adds another question to deepen student thinking. This can be used as a warm-up, a check for understanding, or a summative question.

- The lesson slideshows provide teachers with materials that support student questioning. In Chapter 11, the slides ask, “What does momentum mean? Can you think of an example? How is the physics definition of the word different from everyday usage?” At the bottom of the slide in the speaker notes, it addresses the preconception that students might have about momentum and gives an example of momentum at a sporting event. There is evidence of teachers being given resources on student questioning throughout the chapter and providing answers. The Chapter 12 PowerPoint has assessment questions with answers, and the chapter review has questions and answers posted; the investigations start with an essential question posted at the top of the lab experiment, for example, “How do you use pulleys to lift heavy objects?”, and a video showing how to do the lab with answers to the analysis questions in the video. There is no evidence of teacher responses to student responses to deepen their thinking.
- The materials provide some teacher guidance for anticipating student responses. Students study series and parallel circuits in Chapter 17, and the materials provide teachers with some background information that includes limited information on how to design, construct, and test series and parallel circuits using schematics and circuit materials. The materials provide questions and thoughts for students to ponder to help them understand series and parallel circuits and how to represent them pictorially.

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

- The materials lack teacher guidance on how to scaffold and support student development of the use of scientific vocabulary. For example, Chapter 20's Lesson Plan has vocabulary words outlined but no guidance on implementation. Vocabulary words are identified clearly, but no breakdown of each word is included. The materials do include scientific vocabulary at the beginning of chapters, such as in Chapter 13.1, Rotational and Angular Momentum. A paragraph describing translation and rotational motion lacks teacher guidance of critical information before the lesson to guide the instruction.
- In the lesson resources, the book offers some support for students but no clear evidence of scaffolding. For example, Lesson 5.1 Forces provides support for students to build on prior knowledge in the language portion of the lesson resources. The resource states, "We use contextual and visual support (slides, pictures) to develop background knowledge by building from common words"push " and"pull,” illustrated on the slides, then developed into their more academic physics meaning as forces in pounds and newtons."
- The materials provide assignments that support students' use of scientific vocabulary in context, but there is a lack of teacher guidance.. For example, in lesson 2 of Chapter 5, students learn that force is a vector. The sidebar of the textbook guides teachers to have students assign a positive or a negative direction to the vector prior to completing any calculations. The materials do not instruct teachers to lead students in the development of an anchor chart with emphasis placed on the most important words or representative images.
- The materials lack teacher guidance on how to scaffold and support student development of the use of scientific vocabulary. For example, Chapter 20's Lesson Plan outlines vocabulary words but provides no guidance on implementation. The materials provide clearly identified vocabulary words but no breakdown of each word. The materials do include scientific vocabulary at the beginning of chapters, such as in Chapter 13.1, Rotational and Angular

Momentum. A paragraph describes translation and rotational motion; however, the materials lack teacher guidance of critical information before the lesson to guide the instruction.

- In Chapter 9, the vocabulary terms being introduced are highlighted in a different color, and uses a video to explain kinetic energy; however, it provides no guidance on what to do with that knowledge. In the lesson plan, it says that the video will reinforce the objectives of this lesson, but nothing about what to do after they watch the video. On the student work page, the students are doing calculations, and the definition of kinetic energy is given; however, there is no practice using the vocabulary. The students use vocabulary to build their knowledge of the content; however, no teacher guidance is given. In Chapter 4, Section 2, the Section 2 review gives students a chance to answer review problems and questions that use both math and vocabulary questions; however, no guidance on what to do with that assignment or what to do if students do not understand something.

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

- The Present Key Content area in the materials provides teacher guidance on the suggested slide where a student can give verbal or written responses, but it's not clearly stated. The lesson has two opportunities for teachers to be given guidance on student discourse; however, the materials only state what the student should do as a result of reading or viewing the interactive slides. The student can do both verbal and written, depending on the instructor’s preference.
- Teachers have materials to support students in discourse; however, there is no guidance on using evidence to support their claims. For example, in the Properties of Light PowerPoint, students do a think, pair, share activity where students answer a question about being able to see their best friend in the dark. However, the materials provide no guidance to use evidence to support their opinions. In the lesson plan, teachers use the materials to support student discourse; however, evidence of students using evidence to support their claims is lacking. For example, in the whole group discussion, students describe speed quantitatively but are not prompted to use evidence in their descriptions.
- The materials lack teacher guidance on preparing for student discourse and supporting students in using evidence to construct written and verbal claims. In Chapter 1.3, Lesson 6 Design Project: Solar Power, a student prompt provides questions for what they need to identify but no teacher-specific guidance. The materials lack teacher guidance on preparing for student discourse and supporting students in using evidence to construct written and verbal claims. In Chapter 1.3, Lesson 6 Design Project: Solar Power, the materials suggest design considerations but do not support student discourse. Students will present their findings to the class, but no further direction for the teacher is provided.
- The materials lack support for teachers to prepare students for discourse. For example, the lesson plan on Momentum has suggestions for whole-group activities, such as asking students to describe some objects that would be difficult to stop and following up with a question about what these objects have in common. The materials provide teacher questions for student discourse but do not support using evidence in constructing written or verbal claims. For example, in the whole group discussion for the lesson on levers, the lesson plan presents several different questions to be addressed, but nowhere does it explicitly ask for evidence to support the claim that a student may make. Some of the questions listed in the lesson plan are "How could you lift a car with one arm?" and then this question is followed up in the slideshow with a few images with the follow-up questions: "How are these alike?", "How are these different?”

and "How does physics apply to each?" It may be implied through the questions that the student should support their response with evidence; however, it is not explicitly stated.

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

- The materials do not include supports for teachers in facilitating the sharing of students' thinking and finding solutions. For example, in Investigation 2A: Levers, the teacher is given guidance through steps of the lab, such as, "Students demonstrate the use of spring scales, hooked lab masses, slotted masses, and fulcrums,” and "Students develop free-body diagrams." The note regarding mechanics of the lab that discusses fulcrum placement helps, but no additional teacher guidance or support to help students share their thinking and find solutions is present.
- The materials do not support for the teacher in facilitating the sharing of students' thinking and finding solutions. For example, in Investigation 12C: Ramps and Inclined Planes, teachers have support on lab setup and Smart Cart information; however, there is no evidence for teacher support to facilitate student thinking.
- Part 5 of the Lesson Summary guides the instructor on how to get each group to present their findings and share them with the class after the teacher presents the slideshow. The teacher resources in the Present Key Content section, the student is given an opportunity to express themselves, but there is no clear direction for the teacher on what he or she could do.
- In Chapter 7, students share their solutions; however, there is no evidence of teacher guidance. In the student work, the students complete their worksheet using the simulation, and then it says for the teacher to “bring the class together for a discussion of the relationships depicted in the two graphs in part three of the investigation,” however there is no guidance on what to do with that discussion.
- The materials do not include teacher support and guidance in sharing of students' critical thinking in various modes of communication throughout the year. For example, when students study the concept of Newton's First Law of Motion. Guidance is provided to have students make predictions on movement in a free-body diagram and then on how to make calculations from a free-body diagram. There is no indicator that the student will share their predictions with the rest of the class or just make the prediction in their notes journal. The materials do not provide support for facilitating the sharing of students' findings.

PASCO SCIENTIFIC Essential Physics

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.	PM
3	Materials include assessments that integrate scientific concepts and science and engineering practices.	M
4	Materials include assessments that require students to apply knowledge and skills to novel contexts.	M

Partial Meets | Score 1/2

The materials partially meet the criteria for this indicator. Materials include some 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 student expectations over the breadth of the course and sometimes indicate which student expectations are being assessed in each assessment. Materials include assessments that integrate scientific concepts and science and engineering practices. Materials include assessments that require students to apply knowledge and skills to novel contexts.

Evidence includes but is not limited to:

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

- The materials include diagnostic assessments to help teachers collect information to identify and progress student achievement. For example, at the start, the publisher provides a PowerPoint of lesson 1 of Chapter 1: Science of Physics, which asks two assessment questions prior to the lesson being taught. These same two assessment questions are then asked again at the end of the lesson so that the teacher can measure learning gains and progress from the start to the end of the lesson. The materials include formative assessments in a variety of formats to measure student learning and determine the next steps for instruction. For example, in Chapter 2: Physical Quantities and Measurements, embedded questions in the lesson help monitor student learning, such as asking students to use the interactive calculator to calculate how many seconds are in 365 days and calculate how many minutes and seconds are in 0.685 hours. They also include summative assessments in a variety of formats. For example, at the end of each lesson, two to four questions for the students to answer in a whole group discussion ensure that students have mastered the lesson.
- Chapter 3, Position & Velocity, includes a range of assessments in different formats gearing up students for academic success. They include short summative CFUs, interactive problems with several answers, constructed responses, and standardized-type questions. The Pasco Test Bank Infinite exemplifies a diverse, vast range of test questions with adjustable rigor and presentation

styles and applicable to the lesson items that all meet the needs of every learning type summatively and formatively. For example, teachers have the option to select questions by chapter, such as Chapter 4, or by section, such as Section 4.1, Acceleration, or Section 4.2, Gravity and Freefall. They provide different levels of multiple-choice questions. In the PowerPoint for Acceleration, the assessment listed at the very beginning consists of 5 questions that teachers use as a pre-assessment. Then, at the end of the slideshow, those same five questions are there so teachers can use them as a post-assessment to compare how students did at the beginning and end of the Acceleration Chapter. The materials have questions spread throughout the PowerPoint meant to be used as formative assessments to check students' understanding as the teacher goes through the lesson. For example, after talking about the equation for acceleration, there are sample problems to work through and questions about what a positive vs. negative acceleration means in different scenarios.

- The materials include summative assessments through the Test Bank feature. Teachers can add questions specific to any chapter in the book. For example, they can add questions to assess student understanding of Newton's Law, including performing specific calculations using kinematic equations and Newton's Laws; F=ma. EX) 5600 kg jet reaches a takeoff velocity of 60 m/s after accelerating from rest for 800 m down the runway. What net force is required from the jet's engines?
- The materials include diagnostic assessments in the form of Assessments at the beginning of student notes. For example, in Chapter 17, the slide presentation begins with an Assessment that asks students to define electric current and identify symbols for currents. These questions can be used in the form of a pretest, with the answers to the questions are at the end of the presentation.

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

- The materials assess all student expectations, as outlined in the TEKS, by the course. For example, the standards correlation to content and assessment dashboard found on the home page outlines every standard that is assessed and where in the textbook it is assessed. The materials do not directly indicate which student expectation is assessed. For example, when generating a test using the test bank, it references which chapter and section the question is derived from but not the state standard. When cross-checking back to that specific chapter, section, and the lesson planning document references the standard but not the standard number.
- The materials include an assessment table overview listing all assessments for the unit and the specific student expectations assessed by each. It is located in the tab titled Standards. It includes hyperlinks to each standard correlation for both student and teacher materials. For example, TEKS-1.B. content is linked to four different pages, all located in the student book. TEKS-1.F.iv content is located on four different pages, once in the teacher edition and three times in the student book. Lesson plans do not list TEKS to provide teacher guidance. Materials do not provide TEKS correlation for each assessment item.
- In the back of the textbook, the Standards section lists all of the TEKS taught and where they are assessed. You can look at TEKS 8.D.iv about investigating behaviors and waves, including interference, and see that it is assessed in Investigation 15D, content taught in Chapter 15, Section 3, taught again in Chapter 16, Section 3, and assessed again in Chapter 16, Section 3 in the TE sidebar. In the test bank, questions are selected by topic so teachers will always know what student expectations are being assessed. For example, in Chapter 5, Test Bank, you can

choose if you are looking for questions over Section 1 Forces, Section 2 Newton's Laws, Section 3 Springs and Hooke's Law, or Section 4 Friction. However, the assessment questions are all linked to topics and not specific TEKS

- Chapter 6.1 assesses student expectations and indicates which concepts are assessed; however, the TEKS are not listed. For example, the student will be able to: 1) distinguish between vector and scalar quantities and provide examples of each 2) use vector diagrams to interpret the relationships among vector quantities,
including force and acceleration; and 3) use mathematical and graphical vector addition to make predictions and solve problems involving vector quantities. Also, in the Lesson 1 lesson plan, the Assessment Evidence section lists the objectives being assessed with each question, but there is no mention of TEKS. For example, it states, “Objective 1: Which of the following quantities are vector quantities? Choose all that apply.”

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

- The quantitative and conceptual problems both integrate scientific concepts and science and engineering practices in several problems in the Chapter 4 review. Chapter 17 assesses students on both levels after brief readings on science and engineering. The students read and then interact with visual simulations that are followed by knowledge checks throughout the unit.
- In Chapter 10, the assessments use science and engineering practices. In Investigation 10B, students collect data to graphically determine the net work done on a car and then use a graph and their data to calculate the final speed of the car. Students answer several questions about their data and the efficiency of the work done. Students then change something about the variable and redo the calculations. The lab idea and concepts are assessed again in the chapter review at the end of Chapter 10 in question 31. Chapter 12 assesses science and engineering concepts. For example, students learn about machines and mechanical advantage through reading, an iterative equation, and answering several questions including both conceptual and mathematical questions.
- The materials include assessments that require students to integrate scientific knowledge and science and engineering practices appropriate to the student expectation being assessed. For example, in Chapter 3: Position and Velocity, students are given the following scenario and question: Janet is pulled over by a police officer for going faster than the speed limit. Janet, a high school physics student, argues that she did not violate the law because her average velocity over the course of the last five miles was under the speed limit. The officer still gives Janet a ticket. What was the mistake in Janet's argument? The materials include assessments that require students to integrate scientific knowledge and science and engineering practices appropriate to the student expectation being assessed. For example, in Chapter 9: Work and Energy; at the end of the chapter, students answer the following conceptual question: The force of hot expanding air from exploding gunpowder propels a cannonball out of the barrel of a cannon. How might the cannon be modified so that the cannonball leaves at a higher speed without increasing the amount of gunpowder used?
- Materials include assessments that integrate scientific concepts and science and engineering practices. In Investigation 11a: Conservation of Momentum, students are asked, "How does momentum change for objects in an isolated system?" Students will collect velocity and momentum data in a table and use their knowledge of systems. Students will then describe and evaluate their data then they will make predictions based on their findings.

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

- The materials include assessments that require students to apply knowledge and skills to novel contexts. For example, in Investigation 16D: Resonance and Sound students will "demonstrate use of a resonance tube and tuning fork; students investigate frequency and resonance characteristics of waves." Students demonstrate their understanding of waves through graphs. They also calculate wavelength and frequency and propose a hypothesis for the change in resonance frequency with the amount of water in a wine glass.
- The materials include assessments that require students to apply knowledge and skills to a new phenomenon or problem. For example, students use the equation for momentum (p = mv) in a variety of scenarios, including determining the velocity of a sprinter at a given momentum and then understanding what would happen to the velocity if the momentum was half of the original value. The materials include assessments that require students to apply knowledge and skills to a new phenomenon or problem. For example, when students are introduced to the concept of impulse, they use three different scenarios involving the same 1.0 kg clay ball to calculate the impulse.
- In Investigation 24A, the Assessments require students to apply knowledge to novel contexts. Students look at how heat is transferred in a house by looking at house insulation, window area, outside and inside temperature, wind speed, and weather conditions. Students then describe heat flow in terms of convection, conduction, and radiation. Further down in the investigation, the going further has students designing and carrying out an experiment that looks at the effects of different window construction on heat transfer.
- Chapter 10.1, Frictions and Open Systems includes an assessment directly created to have students show their ability to apply knowledge and skill from their readings. After the reading, the slides that accompany the lesson include 3-4 questions that follow up on the reading. Chapter 1.1, Waves, Sounds & Light, presents evidence of a student's ability to apply skills and knowledge after a reading with two different assessments of knowledge that follows the reading.

Indicator 6.2

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

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

Partial Meets | Score 1/2

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

Materials include some guidance that explains how to analyze and respond to data from assessment tools. Materials do not 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 do not yield relevant information for teachers to use when planning instruction, intervention, and extension. Materials do not 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.

- There is limited evidence of materials or resources that provide teachers guidance on how to evaluate student responses. There are no checklists for giving feedback, no guidance on how to grade labs or suggestions for fixing common errors or misconceptions that students might make in solving problems. The Chapters have solutions posted for chapter reviews, questions within the chapter, lab solutions, and within the PowerPoint. These solutions provide a sample of what teachers need to see from students; however, they provide no guidance on what to do if students make mistakes or what to do if students do not get them correct.
- Materials provide some teacher guidance for evaluating student learning and support differentiating between process errors and understanding errors. For example, materials do not point out that students may incorrectly substitute any variable or miscalculate when using the different steps for solving the problems. Materials do not provide a generalized rubric teachers can use to evaluate whether students are rated as developing, progressing, and proficient for each component of the learning objectives.
- Materials do not include information to guide the teacher in evaluating student responses. For example, materials do not contain a warm-up activity that relates to the previous day's lesson to

determine the student's ability. However, it does include problems at the end of each section that you can click on “show solution,” and it does show step-by-step how to solve the problem.

- Chapter 1.1 provides a resource with information on how to evaluate student responses. The Show Solution tab provides an explanation of the answer to assist the teacher and increase the depth of knowledge for the students. In the lesson plan in chapter 1.2, the assessment guide presents questions, solutions, an explanation of the answer, and a statement showing that answers may vary as well. The teachers can use this to enhance their lessons and set up differentiated instruction as well.

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 do not include a data analysis overview section to support the teacher’s analysis of assessment data. Materials do not provide suggestions for how to examine patterns or trends in the data that help teachers better understand student performance.
- Materials do not provide questions or prompts for teachers to reflect upon while examining patterns in the data. The materials do not provide diagnostic reports of performance patterns or students’ strengths and needs, individually or as a class.
- The Pasco test link gives the teacher the ability to create the form for the unit, choose rigor, number of problems, and make multiple versions of the test but there is no data or information accessible to further the help of the students' needs.
- The materials do not provide guidance to teachers to respond to individual student needs. For example, the Pasco 4.1 Self Assessment Quiz on acceleration presents the quiz, scoring of the quiz, and visible solutions but there is no data source for the teacher in this process to evaluate data and assist or plan for student needs.
- Materials do not provide guidance documents and resources for teachers' analysis of assessment data, the interpretation of data, or an assessment tool that teachers can use to easily analyze and interpret. For example, scores are not color-coded to indicate level of mastery, materials do not provide videos or recorded webinars that explain how to interpret data, and there is no supplementary Q&A guidance document on data-driven instruction in science.

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

- The assessment evidence section of the lesson plan in chapter 4 presents a visible plan for assessment with tools or descriptions for intervention, such as prior knowledge key to differentiated instruction but it does not specifically state how each is done or in what capacity they can be used.
- The materials do not suggest ways to make instructional decisions (e.g., how to group students by concepts that need to be retaught, how to set objectives or goals for crafting an argument, etc.). Materials do not provide suggestions for teachers to consider regarding the potential need for whole class review or reteaching. There is no evidence that data-management tools allow teachers to color-code or organize student data to differentiate science instruction.

- The Lesson 2 resources on the left-hand side point at language support for students but does not provide clear evidence of what else to do or what levels to assess. It is unclear what to do with the data provided to teachers.
- There is no evidence of assessment tools for teachers to use to help with planning instruction, intervention, or extensions. The assessment tools do not provide data on how students performed as a group.
- The material gathered from assessment tools do not help teachers when planning core science instruction. For example, the materials do not include self-reflection questions or suggested ways to make instructional decisions.
- The information gathered from assessment tools does not help the teacher in planning differentiated instruction. For example, the materials do not include computer-generated reports grouping students by mastery of skills.

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

- Pasco materials present no evidence for data and activities that support student progress or for using data and activities to support student progress.
- Materials do provide a variety of student resources for teachers to use in responding to performance data. For example, materials do include videos that help with the set-up and procedures for each lab in the textbook. There are also videos and simulations that help explain harder concepts.
- Materials do not provide a variety of teacher guidance for responding to student data. For example, the materials do not include a teacher guidance document on how the data from the diagnostic assessment can be used to plan small group instruction to address learning gaps.
- Materials do not provide a teacher manual that includes activities in the program to assign students when they have difficulty answering assessment questions or a list of suggested activities to assign students when students score below a set threshold on a module assessment.

Indicator 6.3

Assessments are clear and easy to understand.

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

Partial Meets | Score 1/2

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

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

Evidence includes but is not limited to:

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

- The Pasco Physics Test Infinite Test Bank test creates an assessment for each chapter. For example, an assessment generated for Chapter 3 embodies a variety of questions with different rigor and the ability to make different versions of the test. The Test Your Knowledge Assessment in Chapter 3 is a simple assessment of the reading that precedes it, and the assessment contains items that are scientifically accurate, avoid bias, and are free from errors.
- The materials show evidence that the assessments are scientifically accurate, avoid bias, and are free from errors. In the test bank for Chapter 16, the questions are all correct, there is no bias in the questions, and the questions are no errors. For example, a question says, "The lowest string on a violin has a fundamental frequency of G-natural at 196 Hz. Which frequency represents the second harmonic of the string?" The answer choices listed below are incorrect a,b, c, d, e order, and the correct response of 392 Hz is listed. The materials provide evidence that they are free from bias and contain no scientific inaccuracies. Question 1 from Section 7.1 Test Bank is accurate and has no bias or errors.
- Assessments contain items for the course that are scientifically accurate. For example, in Chapter 3, the assessment clearly defines the properties of displacement as being a change in position, being either positive or negative, and as equal to the final position of an object minus the starting position of an object. Assessments contain items for the course that avoid bias. For example, in Chapter 14: Harmonic Motion, the assessment asks, "How does the period of the

pendulum depend on length, mass, and amplitude?" This question is asked after the student has had the opportunity to experiment with these variables working with a pendulum.
- The assessments contain items that are scientifically accurate, avoid bias, and are free from errors. Chapter 5 assessment describes types of forces and how to calculate applied forces. Assessments contain items that are scientifically accurate. For example, in the Chapter 1 unit test, a question asks, "Which of the following best shows 0.00288 kg in scientific notation using the correct number of significant digits?" and provides four answer choices.

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

- Assessment tools use clear pictures and graphics. For example, in Chapter 14: Harmonic Motion, the Standardized Test Prep accurately shows a graphic of a position vs. time graph of an oscillating mass. They also contain pictures and graphics that are developmentally appropriate. For example, in Chapter 17: Electricity and Circuits, the assessment at the end of the chapter uses diagrams of a circuit that uses symbols that are age appropriate for the course.
- The materials have pictures and graphics that are developmentally appropriate. Chapter 16 uses pictures with some of the questions to help students visualize the concept being tested. The graphics are an integral part of some of the questions, such as questions about which waves would cancel each other out if added together.
- The materials provide developmentally appropriate pictures and graphics. In Chapter 17, Section 2, the question about a circuit includes a circuit drawing with a battery labeled V, an arrow representing the direction of the current, and a resistor labeled R. The students then do a calculation about the voltage of the circuit.
- The Test Your Knowledge Assessment at the end of the unit's reading has a very visible and appropriate image to go along with the reading in an effort to assess student mastery. The Test Your Knowledge Assessment in Chapter 9.2 presents a very vivid and question-appropriate image to accommodate the open-ended assessment question.
- The Chapter 5 assessment for Section 5-1 uses a diagram to represent a ball of mass at rest on the floor. The illustration includes free-body diagrams labeled v, w, x, y, and z. The Chapter 21 unit test references the figure by stating, "The figure shows a person observing a fish in a pond. The fish appears to be located at a different position from its actual position."

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

- The materials provide some guidance on correct answers on assessments and worked-out solutions on assessments. The materials also provide options for teachers to make alternate forms to make sure tests are reliable. The materials do not provide an outline of how to use the formal assessments and do not provide guidance on how to administer the assessment.
- The materials do not provide clear guidance for teachers to consistently and accurately administer assessment tools. For example, materials do not include an assessment guide that supports the teacher's understanding of informal assessment tools included in the curriculum.
- Materials include detailed information that supports the teacher's understanding of the assessment tools and their scoring procedures. For example, at the end of each section in a chapter, there is a self-quiz that, when checking the answers, shows the problems worked out with a full explanation.
- The Chapter 11.1 Test Your Knowledge assessment presents a question about the momentum of two vehicles carrying different masses, and they show a portion of the problem and lay out each set of information properly solved so the teacher can check over the student's work. However, a

lack of visible data evidence makes it difficult for a teacher to know how to administer the assessment accurately. The materials lack guidance on collecting consistent and purposeful data.

- The materials offer alternate-form reliability to maintain consistency of test results between two different but equivalent forms of tests. For example, self-grading quizzes are "randomly created with new values for problems every time." "No two students ever get the same quiz twice." "Tests can be created with multiple versions that have the same questions but with different numbers and different answers.”

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

- Materials do not provide visual cues using color-coded text within assessments or a text-to-speech feature on the web-based assessment platform. The materials offer tests that can be edited to have fewer questions, fewer answer choices, and lower levels of difficulty to assist students with this accommodation.
- The materials provide accommodations for video clips to have closed captioning. When the video is opened it does so on Youtube. From there, you can click on closed captioning at the bottom. For example, in video 4A Acceleration, you can watch and listen to or read the closed captioning that is available. There is not any color-coded text within assessments or text-to-speech features on assessments.
- The materials offer accommodations for assessment tools so students of all abilities can demonstrate mastery of learning goals. For example, when building an assessment in the test bank, the teacher can select a difficulty level of questions ranging from 1 (easy) to 3 (difficult). However, materials do not include visual cues using color-coded text within assessments.
- The Lesson Plan for chapter 24 includes a key to differentiated instruction that may suggest accommodations, but it is not clear on how each will be of use. The Chapter 4.1 Lesson has language support to assist the student, but it does not point at anything directly in the form of an assessment.

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 mastery.	DNM
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

Partial Meets | Score 1/2

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

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

- The materials provide scaffolded instructions and differentiated activities for students in the chapter review. The differential for all level learners is indicated by a scale of chili peppers next to the question number. However, the materials do not provide additional resources for targeted instruction and differentiation to support students who have not yet achieved mastery.
- Chapter 3, Lesson Plan: Motion Graphs, displays an example of scaffolding and targeted instruction in the prior knowledge portion of the lesson plan by stating exactly what the student should know and revisit in case of need. However, there are no additional recommended instructions or activities for students who did not master the material initially.
- In Chapter 4.1, Lesson 3: Models of Accelerated Motion, students use model graphs to compare the area under the graph. Students then manipulate the models using interactive calculators. Lastly, in the presentation, there are examples for problem-solving and the steps to work out complicated problems. These scaffolds are present; however, there is no indication that these are intended for students who have not mastered the concept.
- At the end of section 5.1, the review section asks students different conceptual and numerical questions to show their mastery before moving on to the next section, which builds on 5.1. However, there are no activities or scaffolds present for students who did not master the topic.

Materials provide enrichment activities for all levels of learners.

- Each chapter includes a list of hands-on experiments and activities for students. It also includes extension activities. For example, Chapter 5's Lesson 2 Blueprint has an extension activity titled "A Microscopic View of Friction." The materials have different types of labs included in Chapter

5, for example, a Forensics Lab in which students use simulated skid marks to look at a car's motion.

- The materials provide videos to extend learning for learners at all levels. For example, Chapter 3: Position and Velocity has multiple videos and animations available, such as "Origin of a one-dimensional object." They also provide simulations and interactive equations that extend the learning for learners at all levels.
- At the end of section 5.1, the review section asks different conceptual and numerical questions so students can show their mastery before moving on to the next section that builds on 5.1. In Chapter 10, the section about designing a hydroelectric power plant provides students who have already mastered the topic a chance to go further into the material.
- The Chapter 16 Lesson Plan has indicators at the bottom of the lesson plan that use the different learning types. In the lesson plan sections, each indicator is shown for the particular sub-unit. The Chapter 4, Lesson Plan Gravity and Freefall, presents the same indicators for different learners, but they show no evidence of enrichment activities for learners.

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

- The materials include a self-check quiz for just-in-time learning acceleration for all students. They also include challenging assignment questions that extend beyond the regular curriculum to encourage critical thinking and problem-solving under the heading of conceptual and quantitative at the end of the chapter.
- In the materials, the teacher page of the chapters includes a yellow sidebar, Present Key Content. This highlights points for the teacher to be aware of during the lesson. For example, in chapter 7.1, Lesson 2, Centrifugal "force," language supports are provided to assist the teacher while introducing new vocabulary terms in the unit. There are also photos of the presentation side where this will need to be addressed. Each chapter blueprint offers a detailed list of activities and lessons that can be used to teach that chapter.
- Chapter 8.1: Static Equilibrium exhibits a well-defined example of a just in time learning of Newton's Laws with well-defined examples, equations, and descriptions of exactly what the laws embody at the very beginning of the unit.
- In Chapter 10, students solve problems that are broken down step by step to help struggling students with the material see how to solve them in a very neat and systemic manner designed to make sure students are able to learn the material.

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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).	PM
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.	PM

Partial Meets | Score 1/2

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

Materials include a variety of developmentally appropriate instructional approaches to engage students in the mastery of the content. Materials support some 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 some of the information about people and places.

Evidence includes but is not limited to:

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

- The lessons include authentic tasks such as lab activities where students use tools to measure and collect data. Each chapter contains conceptual and numerical problems for students to solve, investigations for students to complete, videos for students to watch, interactives for students to use, and engineering practices for students to use to provide a variety of ways to help students engage with the content being taught.
- At the bottom of each lesson plan, the section titled “Key to Differentiated Instruction” uses icons to indicate what instructional approaches are being utilized in the lesson. For example, the Lesson Plan for Graphing Data in Chapter 2 utilizes visual, interpersonal, kinesthetic, linguistic, intrapersonal, auditory, and logical approaches.
- In Chapter 21, Snell's Law of Reflection, a variety of developmentally appropriate instruction provides the lesson with readings, notes, and student work. After the initial lesson mastery, the student may indulge in scientific-based or engineering-based investigations, videos, and even interactive slideshows.

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

- In the Lesson Plan for Electricity and Circuits, the lesson uses whole group discussion, investigations where students work in smaller groups, and one-on-one student work. There is no evidence in the resources that provides consistent teacher guidance for when or how to implement specific group structures based on student needs.
- Chapter 24.1 Heat Transfer By Conduction has an interactive simulation in which the lesson plan offers some guidance for flexible grouping and reads, “Encourage students to complete the assignment sheet with their lab partner while working on the simulation.”
- Chapter 11.1 Design a Crash Barrier presents a lab activity that shows the capability of being individual or small to large group-oriented by all the possible steps and activities listed; however, there is no specific teacher guidance for grouping in the lesson plan or lab materials. For example, it isn’t until the lab activity is completed that the lesson plan references grouping by saying, “After the crash barriers have been evaluated, student groups make a brief presentation about their design and its performance.”
- In Chapter 2, Lesson 3, these materials state student work could be completed independently after the lesson. There is a suggestion that after students complete their Graphing Data Assignment, they work with a partner to check their work. In Chapter 3, Lesson Plan, Vectors, during the Vectors assignment, the materials guide the teacher to encourage students to work with a partner. Once students have completed the assignment, they discuss their answers with another group.

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

- In Chapter 3, Lesson Plan, Vectors, the lesson begins as a whole group discussion. Probing questions are provided to help the teacher guide the discussion. Investigation 3A: Displacement consistently supports multiple types of practices by the means of instructor-led notes, guided work, independent work, and items that can be collaboratively worked on.
- The lesson plans provide guidance on instructional activities and effective implementation of providing multiple opportunities for students to learn from each other in a science classroom. Chapter 27.4 exhibits clear examples of work that can be independent or collaborative depending on the teacher’s or student’s ability, class size, or individual need.
- In Chapter 21, students are given pictures and step-by-step problems to solve to give students plenty of modeled and guided practice to learn the material. There is a section review on refraction to give students a chance to independently practice their knowledge of refraction to help students show their mastery of the content.
- Each lesson that involves calculations uses an example for students to refer to. For example, in Chapter 2.3, the section titled “Multiplying with Conversion Factors," has an example of how to correctly convert meters to inches.

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

- The images reflect the diversity of school communities and match the content. Characteristics vary in images to include race and ethnicity, skin tone, and gender identity. However, the materials did not provide a diversity of scientists mentioned in the textbook based on race or disability.

- Chapter 1 shows some diversity in images, such as farmland, a white female taking a photograph, and a group of diverse students sitting together at a table. Chapters 3 and 4 did not show the diversity of communities throughout the chapter. For example, the two chapters display pink and blue computer-generated avatars: a white hand on a steering wheel, a white hand on a Smart Cart, and a white avatar showing coordinates from GPS signals.
- In Chapter 1.3, Lesson 5, the slide presentation for Science and Your Career has images of people from diverse backgrounds doing a variety of jobs. However, in the first chapter, the person appeared to be white in every image with a hand. There were no diverse skin tones included.
- The hands shown in investigation 21A are white and later show a picture of a person looking in the mirror, who looks to be white. In Chapter 18, many different examples of magnetic and electric fields are shown; however, any time there is an image of a hand during a demo, it is white.

Indicator 7.3

Materials include listening, speaking, reading, and writing supports to assist emergent bilingual students in meeting course-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.	DNM
2	Materials encourage strategic use of students' first language as a means to linguistic, affective, cognitive, and academic development in English.	PM

Partial Meets | Score 1/2

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

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

Evidence includes but is not limited to:

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

- The materials include linguistically accommodated content in the student materials, such as step-by-step processes with images for lab investigations and a video that also shows the step-by-step process of the lab investigation. For example, in Investigation 11A: Conservation of Momentum, the student handout has an image of the set-up for the lab and an accompanying video embedded in the student e-book that demonstrates the set-up and the steps the student will take during the investigation. However, the materials did not include clear linguistic accommodations commensurate with various levels of English language proficiency as defined by the ELPS. For example, the materials did not include a sidebar or footnote references to clearly demonstrate ELPS connections by referencing the language of the ELPS or their specific outline location administrative code and how the lesson supports any given ELPS.
- Lesson 3.2: Speed & Velocity resources offer language support for learners on grade level, but nothing else indicates alignment or enhancements as defined by ELPS. The Chapter 2 study guide vocabulary presents the words in English with an interactive overlay on the word that translates and pronounces the terms, but there is no evidence of scaffolding or any other rigor that goes higher.
- Lesson 7.1 has evidence of linguistic support for all students but no specific references to the ELPS. In Chapter 7, the pictures help with definitions of words, and equations are written in variables/letters and in words to help all students learn the material. The lesson plan has scaffolding for linguistic support with the vocabulary words listed and titles at the top of each

section to help students see the main topic before reading it. However, there is no mention of the ELPS.

- The materials provide limited linguistic accommodations defined in the ELPs. For example, brief Language tips are available in the yellow teacher sidebar. In Chapter 4.1, the Language section says, "Students use pre-reading supports (illustrations) and pre-taught topic-related vocabulary (slope) to enhance comprehension of text." There is no evidence of any guidance for teachers to use the ELPS or specifically support English Language Learners.

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

- Embedded videos in the teacher sidebar allow students to auto-generate closed captioning in different languages, which encourages the use of students' first language and promotes academic development in English. The materials lack tips and support for teachers about the importance of allowing students to speak and learn in their first language.
- Lesson 1.2: Scientific Logic exhibits the strategic use of students’ first language as a means to linguistic, affective, cognitive, and academic development in the language support of the lesson resources. This part of the lesson focuses on if-then logic and having students create one after seeing several examples. Chapter 2.1 Language Supports help students learn to speak using synonyms and circumlocution to clarify their understanding of new concepts.
- In the videos (through YouTube), linguistic support can be found through the use of closed captioning and auto-translating to different languages. In video 4B: A Model for Accelerated Motion, closed captioning and translation features help students learn the content and support their learning of English. In Chapter 12, linguistic support for students comes from the use of English-to-Spanish options to translate vocabulary terms. Clicking on the vocabulary words, such as the words *simple machines* in Chapter 12, the option appears to read the word and definition in either English or Spanish.
- The materials encourage some strategic use of students' first language for the linguistic, affective, cognitive, and academic development of English. For example, the materials include a glossary or text boxes with cognates or definitions in a second language, such as Spanish. However, The materials do not include information about language transfer in a handbook, a side-by-side chart, or in the lesson plan.

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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.	PM
2	Materials provide information to be shared with caregivers for how they can help reinforce student learning and development.	DNM
3	Materials include information to guide teacher communications with caregivers.	DMN

Partial Meets | Score 1/2

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

Materials provide some information to be shared with students and caregivers about the design of the program. Materials do not provide information to be shared with caregivers for how they can help reinforce student learning and development. Materials do not include information to guide teacher communications with caregivers.

Evidence includes but is not limited to:

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

- The materials provide a pacing chart to share with students about the overall design of the program. There is no indication that this information is also meant to be shared with caregivers. The materials provide "Features of the Curriculum" that illustrate the components of the student e-book and embedded helps. There is no indication that this information is also meant to be shared with caregivers.
- The materials show limited evidence of what is to be shared with caregivers about the design of the program. The one-page graphic titled “Features of the Curriculum” outlines the components of the course; however, it is not clearly communicated that caregivers can use it. At the bottom of the pacing guide, there are paragraph descriptions of the standards for upper-level students and Honors physics. This information could be shared with the home, but it is unclear whether this is for home use.
- The pre-reading appendix pages share a pacing guide that fully outlines what should be done and how long each specific lesson should transpire. Everyone has access, but it doesn't specifically state who it is directed to. The “Feature of the Program” page is a graphic organizer that exhibits every aspect of the book and all components that can be used. It is very clear and detailed but doesn't say specifically who it is for.
- The materials show how the course is presented and designed at the beginning of the text; however, no clear evidence that the information is to be shared with caregivers was found.

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

- The materials do not provide information to be shared with caregivers for how they can help reinforce student learning and development. For example, letters for home or extension activities with included tips on how to encourage curiosity or provide a quiet working space are not present.
- The materials do not provide letters to families explaining the objectives of the program/unit and how they can support student progress.
- The materials do not provide extension activities that involve caregivers and include tips on how the caregiver can support the student’s needs or any take-home booklets with activities for reinforcing students' learning of scientific vocabulary.

Materials include information to guide teacher communications with caregivers.

- The materials provide no evidence in guiding teachers in communicating with caregivers. There is no evidence in the materials directed at guiding teachers in caregiver communication. For example, the materials do not provide things such as guidance for engaging caregivers as partners in learning, establishing a relationship with a caregiver, inviting ongoing communication and partnership, or sharing progress updates.
- Teacher guidance materials do not provide templates for sharing and explaining to caregivers how they scaffold and differentiate to support student learning.

Indicator 8.1

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

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

Meets | Score 2/2

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

Materials are accompanied by a TEKS-aligned scope and sequence outlining the order in which knowledge and skills are taught and built in the course materials. Materials provide clear teacher guidance for facilitating student-made connections across core concepts and scientific and engineering practices. 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.

- Materials present a clear and well-defined scope and sequence in the Standards Tab that contains vertically-aligned TEKS for guidance. For example, in Unit 1, Lesson 1, the Chapter Summary and Learning Objectives show the scope and sequence, guiding the instructor and students.
- In the Standards Correlation to Content and Assessments, there is a detailed explanation of each of the TEKS with the location in the student book, teacher book, or assessment, and the materials provide a TEKS-aligned scope and sequence with a sample order of instruction listed for the full year.

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

- Materials include interactive simulations that serve as visual manipulatives for the students to strengthen their engineering practices. For example, in Chapter 3, students create a series of individual displacements and then run the simulation to create the total displacement. The simulations engage the students with questions to direct the actions of the interactive simulation and create a building block to connect the concept of vectors. The lesson plan states, “Students solve problems using interactive simulations in which they can specify an initial position and add multiple displacements in one and two dimensions. The 1D simulation animates the motion, and the 2D simulation adds the vectors head-to-tail to find the final position and report the total distance and displacement. This is excellent preparation for understanding vector components."

- Chapter 12, Machines, Lesson 1 uses engineering practices to engage students with the uses of levers. For example, students build each of the three classes of levers, deduce a model for the ideal mechanical advantage, and measure the real mechanical advantage. The student investigation 12A: Levers clearly uses science and engineering practices such as data collection, prediction, and explanations to connect concepts. It states "Use table 2 to test your model. Calculate the predicted output forces from the mechanical advantage and input forces. In column 4 and 5 put the difference between the predicted and measured forces. 2. Propose an explanation for differences between predicted and measured values."
- Materials provide an Investigations tab that easily directs teachers to the laboratory experiments for each chapter and topic. For example, when the text is open to Chapter 7, Circular Motion, and the Investigations tab is clicked, a box opens that displays a link to every Investigation offered for the chapter to connect the chapter concepts. Chapter 7 Investigations include 7A Circular Motion, 7B Orbits, and 7C Extrasolar planets.
- At the top of the Teacher book, there are icons for Science, Technology, Engineering, and Math that show connections that can be made from any chapter or lesson in the materials. For example, in Chapter 9, Work and Energy, when the Science icon is clicked, a box will appear that provides links to all of the Science connections for energy found in the materials. The same is when the Engineering Icon is clicked. Engineering connections appear with links to Electric Current, Electromagnetic Spectrum, Energy Star Program, Energy Guide Labels for Appliances, Smart-Building Design, and Volts, Amps and Power.

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

- Chapter 1 introduces overarching topics that are presented throughout the curriculum and lists spiraled topics that are taught in subsequent units and chapters.
- In the lesson plans, a Prior Knowledge section lists spiraled content from previous units or years.
- Chapters within each unit build off of each other to provide a review of knowledge and skills. Key concept vocabulary is also carried forward.
- Each section has review problems and questions at the end, in addition to digital assessment opportunities. The problems posted show the material for the current unit.
- Reviewing and practicing spiraled knowledge is in each lesson plan. For example, Chapter 15, Lesson 1 opens with a slideshow that engages students with images, vocabulary, and objectives that refer to prior knowledge that is vertically aligned per TEKS.

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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 course.	M
3	Materials include a comprehensive list of all equipment and supplies needed to support instructional activities.	PM
4	Materials include guidance for safety practices, including the course-appropriate use of safety equipment during investigations.	PM

Partial Meets | Score 1/2

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

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

- Chapters include lesson summaries throughout, key content, and evidence of student investigations to help the teacher guide lessons.
- In Unit 3, Lesson 1, an embedded technology animation shows the distance and position ability of items at different positions and lengths. The left sidebar provides additional teacher instructions for concepts. The lesson also includes scaffolding by accessing prior knowledge in the Language section encompassing interactive technology, visual imagery, and vocabulary.
- The materials provide teacher guidance and recommendations for the use of materials, text, embedded technology, enrichment activities, research-based instructional strategies, and scaffolds to support that enhance student learning within the lesson plan document in the sidebar of each lesson.
- The teacher guide provides recommendations for the use of all materials, including text with hyperlinks to PDFs and Word Documents. Embedded technology is enabled throughout chapters, such as interactive simulations and simulators.

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

- The teacher link provides tiles at the top titled Science, Technology, Engineering, and Math. These tiles provide specific topics on these other content areas that are covered in the text. These connections are identified in the embedded button for each content area at the top of the dashboard. A hyperlinked list provides navigation for the teacher to the areas in the textbook where these connections are located.
- Evidence in slide 27 of the Essential Physics companion slideshow is accessible by students and teachers and shows cross-curriculum content, suggesting students make inferences along with the data table results.
- The TEKS Physics Standard Correlations to Content and Assessment lists content standards for the entire course.

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

- Materials do not include an appendix or section within the textbook that contains a comprehensive list of all equipment recommended for the entire course, only individual lab lists.
- The lesson plans include the materials needed for the specific investigation. For example, in Investigation 9A, Lesson 6, the lesson plan delivers instructions and lists the materials needed for the completion of the mini-lab.
- The Engineering Connections tab is a comprehensive list of all engineering investigations; however, to access the materials, a teacher must open each individual investigation. For example, the Design a Pinhole Camera Investigation contains a list of materials with photographs of the materials needed.
- For example, the Safety chapter for physics lists a few safety rules to follow. There is not a separate lab book; however, the Investigations tab does list materials needed for each particular investigation when you click on each one separately, which does not support instructional activities.

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

- The appendix at the back of the textbook contains a Safety section; however, it is a generic list and does not include specific precautions for the unit or chapter activities.
- The lab experiments do not directly reference safety TEKS or specific instructions about safety for the laboratory equipment, only directions on what to do. For example, Lesson 3 in Chapter 11.1 states the student will design a barrier. All objectives, instructions, and materials are listed, but no visual evidence of any safety protocols exists. In another example, one investigation in Chapter 6 uses projectiles, but no indicator in the lab directs students to wear safety glasses/goggles.
- Safety practices are found sporadically in the materials. For example, on the left-hand side of the Design a Pinhole Camera activity, a section titled Safety includes a short paragraph of safety tips along with a graphic of safety precautions for the lab.

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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.	DNM
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.	PM

Partial Meets | Score 1/2

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

Materials do not support scheduling considerations or 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 do not indicate flexibility for teachers, but they can be completed in one school year.

Evidence includes but is not limited to:

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

- The lesson plans are provided and give an overall lesson flow but do not include timelines for unit or lesson completion or recommendations on required time for lessons and activities.
- The materials do not contain evidence of recommendations for time for laboratory and field investigations with considerations for block or traditional scheduling.
- Materials do not support scheduling considerations. For example, Unit 9, Lesson 6 does not provide a schedule or designated time for tasks, leaving teachers and students unaware of the duration required for each activity.

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

- Materials provide a Chapter Overview for implementing content without disrupting the sequence of content that must be taught in a specific order and following a developmental progression. For example, in the Chapter Overview for Chapter 5, Forces and Newton's Laws, the Lessons are shown in the sidebar and progress in a specific order starting with Force and Weight, to Free-body diagrams, then Newton's first law, followed by Newton's second law, and finally Newton's third law.
- The materials in the pacing guide clearly delineate the order of units to ensure students learn about prerequisite concepts first. For example, the sample pacing guide found prior to chapter 1 in the teacher materials shows units 1-4 taught in Semester 1 and units 5-8 taught in Semester

2. Unit 1 covers Science and Physics, Unit 2, Force and Motion, and the text ends with Unit 8, Matter and Atoms.

- The chapter lesson plans provide detailed explanations of how the content needs to be laid out into segments to provide a clear and well-thought-out progression of the material. For example, Chapter 9, Lesson 8: Light and Power, shows evidence of the proper sequential layout of the lesson from start to end through the presentation slides, whole group discussions, and investigations.

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

- The pacing guide materials include lessons and activities for a full year of instruction. The units can reasonably be implemented within the time constraints of a school year. There is no evidence or guidance that the materials are flexible outside of the sample pacing guide provided that shows Units 1-8 listed in sequential order.
- The materials reference an "alternate pacing" for how they could be implemented for upper-level students; however, no pacing guidance or flexible timelines are offered other than the statement saying," The content in *Essential Physics* goes beyond state standards to provide more advanced students with a challenging and intensive curriculum. An alternate pacing for *Essential Physics* corresponds to an upper-level, more mathematical course for students who have already mastered introductory algebra, geometry, and trigonometry. These students will move more rapidly through some of the lessons in the earlier chapters."
- The materials do not indicate flexibility in design. For example, explicit instructions on implementation over a year are not present. The pacing guide states, "The pacing encompassed by these (139) lessons is effective for a first-year course in physics for students who have completed algebra or are taking it concurrently. Teachers can use one lesson from the Essential Physics curriculum for each standard instructional period for a 180-day school year. Teachers can be confident that they are meeting the standards while allowing additional days for assessments, review sessions, extended instruction—and even assemblies!"
- The pacing guide at the beginning of the teacher text shows the approximate time spent on each of the eight units, which indicates a year's worth of instruction. There is a table that shows the unit title, number of lessons, and approximate number of weeks. For example, Unit 2, Force and Motion, has 18 lessons, and guidance says approximately 4-6 weeks. Unit 4, Energy and Momentum, has 29 lessons and says 7-8 weeks. If the maximum number of weeks indicates 190 school days. However, there is no evidence of sequencing guidance beyond the order in which the chapters are presented.

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.

- Chapter 1 in Pasco Essential Physics presents materials that include an appropriate amount of white space and a design that supports, without distracting from student learning. The pages are set up throughout the unit in a manner that is readable, easily identifiable, and not unwelcoming to a user. Chapter 27 Pasco Essential Physics provides another example of a layout that is aesthetically pleasing so the learner maintains proper attention, has the ability to interact comfortably, and does not overload their senses with items.
- The materials have an appropriate amount of white space, and the text is designed to be easily read by students. In Chapter 19, the titles are clear, on separate pages, with title headings at the top of each page in a different color from the text, such as 19.1 - Magnetic Fields and the Electric Motor. This helps guide students with their reading. The main text is black on a white background to not be distracting. Key vocabulary uses a different color to let students know they are important. The text layout only has one topic on a page, so Section 19.1 spreads out over several pages to make it easier for students to focus on one topic at a time.
- The materials do include an appropriate amount of white space and an overall design that does not distract from student learning. For example, student materials are appropriately designed to indicate a clear main topic, titles, and headings are prominent and clear, content is organized in a logical progression, and ancillary student materials such as interactive calculators and simulations are easy to find and access.
- Materials use a limited number of fonts, and color is used intentionally and consistently to guide the user through the content. For example, chapter titles are green, chapter sections are dark blue, and paragraph titles are light blue. Vocabulary is light blue, and keywords in paragraphs are italicized.

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

- Materials include an overview and detailed visuals of circular motion in Chapter 7.1 with picture representations of planets, satellites, and cars driving on turns.
- The materials embed age-appropriate pictures and graphics that support student learning and engagement without being visually distracting. For example, materials include detailed visuals for kinematics in relation to position, velocity, and acceleration. The visuals make clear connections between the position and velocity of a car over a period of time. Also, the materials used in schematics, such as vector diagrams, free-body diagrams, and circuit diagrams, are appropriate for students.
- The pictures used in the text are age appropriate and designed to enhance student learning and not be distracting. Chapter 14 uses a picture of a pendulum swinging, a spring oscillating, and a wave being generated to help students get a visual of what they will be studying in the chapter. Throughout the chapter, the pictures help explain a concept and are located right next to the text about that topic. With oscillations, there is a picture of a ball rolling on a U-shaped ramp, with titles and descriptions about energy, restoring forces, and equilibrium to help students visualize the material.
- The materials in Chapter 2 use age-appropriate items relatable to a high school student, and they should have little issue with any of the portions that require interaction. The charts, problems, and all items the learner may come in contact with can enhance the learner's experience. For example, there are images of weights, a clock, digital scales, a bowling ball, and a beach ball. The “microscopic scale” includes lots of picture examples of images, and each one is correctly labeled in case the student is unsure of what might be in the image.
- The Images in Chapter 19, Magnetism of Pasco Essential Physics, all exhibit appropriate and grade-level appropriate interactions. All of the symbols, equations, charts, and even the cartoon grab the attention of the learner and assist with the lesson's key points. The cartoon has the title "Self-Operating Napkin,” and when you hover over the cartoon, a text box with context appears that says, “A 1915 Rube Goldberg cartoon for a self-operating napkin.”

Materials include digital components that are free of technical errors.

- The materials are free of spelling, grammar, and punctuation errors. Materials are free of inaccurate content materials or information. For example, materials are free of wrong answers to problems, and hyperlinks in the Standards tab are all functional and redirect to the indicated location.
- The text is written without any technical errors. The chapters use correct capitalization and punctuation throughout the text. In Chapter 4, Section 1, there are some Test Your Knowledge questions that are all free of technical errors. The first part is a statement where students will fill in the missing word at the end. The statement uses correct capitalization and has an underlined space for the missing word and a period after that so readers know it will complete the sentence. The options below the statement are listed correctly in a., b., c., and d. order, and all are lowercase letters since it is at the end of the sentence.
- Chapter 19 includes several digital materials that are interactive, highly differentiated, and visible from each indication of interaction on the pages. For example, there are two videos and an interactive simulation of an electric motor. All three are clearly labeled and contain a clickable icon that lets the user know what type of component it is, i.e., video, simulation, etc.

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Chapter 9.1 has embedded videos, clickable digital content, interactive equations, and several other technological activities that enhance student interaction.

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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 and course-specific content.	Yes
3	Materials integrate digital technology that provides opportunities for teachers and/or students to collaborate.	No
4	Materials integrate digital technology that is compatible with a variety of learning management systems.	Yes

Not Scored

Materials are designed to engage and support some 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 and course-specific content. Materials do not 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.

- The materials provide the use of digital technology to support student learning. The materials provide interactives and simulations for students to help support their learning. Chapter 6, Section 1 includes a vector interactive equation that allows students to plug in different vectors, both magnitude and direction and give students the x and y components of the vector.
- The materials integrate PowerPoint slides to support student learning. For example, the PowerPoint for Chapter 6 gives students some example problems to use with the simulation,
- The materials provide teacher guidance for using simulations, interactives, and related activities to support student learning in the User's Guide PDF. For example, in Chapter 17: Electricity and Circuits, the lesson plan gives guidance on how and when to use the interactive calculator in the lesson.
- The embedded technology supports the printed text and does not replace it. For example, when the text is describing voltage drop in a series circuit, there is an embedded simulation that shows the movement of electrons dropping from stage to stage but there is still text that describes what is taking place in the simulation.
- Chapter 3.1 integrates digital technology that supports student learning and engagement with the use of a PASCO learning video integrated into the lesson that also accompanies the reading.
- Chapter 3.1, Investigation 3A: Displacement integrates technology to assist with student learning by having an interactive simulator that focuses on displacement and gives the student

visual and hands-on assistance when working through displacement in both one and two dimensions using a number line and a coordinate grid.

Materials integrate digital technology in ways that support student engagement with the science and engineering practices and course-specific content.

- The materials use digital technology that supports student engagement with science and engineering practices. In Investigation 10A: Inclined Plane and the Conservation of Energy, students use smart cars (cars that run and collect their own data at the same time), an inclined plane, an angle indicator, and graphs to analyze and calculate the conservation of energy in different trials.
- Materials integrate digital technology in ways that support student engagement with science and engineering practices. For example, in Chapter 12.4, Design a Wind Turbine Power Plant, students watch an embedded video and use an interactive simulation to gain information on different variables of the turbine design.
- Chapter 20.3 focuses on the law of reflection in integrated digital technology using an interactive equation in which students can adjust and manipulate all variables to gain clarity on the law of reflection. Chapter 4.1, Determining Acceleration, exhibits digital technology in the interactive simulation that focuses on velocity and time. The interactive activity embodies a graph, the measurements, and all variables that interact when the student presses play.
- The materials provide interactive simulations and models for students to explore science and engineering practices in a virtual environment. For example, in the virtual investigation of waver interactions, students explore the various types of interference using a virtual ripple tank.
- The materials provide opportunities for students to obtain, evaluate, and communicate information using digital tools. For example, when students are investigating motion graphs, the directions have students connect their smart carts wirelessly to the software. The software generates graphs of the motion of the smart cart during the investigation.

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

- The materials do not integrate digital technology that supports teacher-to-student collaboration. For example, materials do not provide an online platform for teachers and students to share materials or post assignments.
- Chapter 4.1 has an opportunity for students to interact with teachers with a slideshow and interactive questioning. Investigation 4A: Acceleration fuses technology and student-teacher interaction using manipulatives, software, data, and other items that interact during the investigation. Although there was an app and ability for digital use, there was no area for teacher/student collaboration present.
- The materials do not provide a forum for students to post class discussion topics via written or video responses. Materials do not provide an online collaborative platform in which teachers and students can share educational materials, create collaborative spaces, post assignments, collaborate on projects, and give immediate feedback to students.
- The materials provide opportunities for students to collaborate on lab investigations. However, no guidance is provided other than to work or discuss with a partner and use digital platforms

(discussion boards, video conferencing, social media-type programs, or online collaboration platforms) for students and teachers.

- The materials provide a way for students to communicate using brainstorming on a whiteboard in some of the lesson plans, including Chapter 5 where the PowerPoint asks for examples of forces, how weight is different from mass, if you go to Mars does your mass change, if you go to Mars does your weight change?

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

- The materials are compatible with multiple operating systems, including on Google Chrome on a Windows computer and on a Chromebook. The product website lists all of the available operating systems and system requirements needed to run the digital resources.
- The materials show how teacher resources can be accessed without the Internet. According to the teacher introduction pages at the beginning of the book, there is a box saying, "Teacher resources are accessed directly from the e-Book of the Teacher's Edition: NO Internet connection needed!" Teachers can download PowerPoint of the notes so they can access them anytime, including Chapter 5, Force and Weight.
- Digital materials provide compatibility and accessibility for multiple operating systems and devices. For example, the publisher's website lists what operating systems that the textbook, simulations, interactives, and videos will correctly operate on. They work on iOS, Android, Windows, Chrome, and Mac. In addition, the user guide lists what operating systems the accompanying software, Sparkvue, will operate on. Sparkvue will operate successfully on Chromebooks, iPhones, iPads, Android, Windows, and Mac systems.
- The materials can be accessed online through any device with internet access; the student and teacher eBook are accessed through a website and a code. In the User's Guide, directions for how to use SPARKvue software are included for Chromebooks, iPads, iPhones, Android, Windows, and Mac devices. The SPARKvue Software shows compatibility with Mac OS, Windows, Android, and IOS.

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Indicator 9.3

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

1	Digital technology and online components are developmentally appropriate for the course 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.	No

Not Scored

Digital technology and online components are developmentally and course-appropriate and provide some support for learning.

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

Evidence includes but is not limited to:

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

- The materials provide related TEKS for online and digital components within the Standards Correlations to Convent and Assessment tab. Each TEKS includes one or more hyperlinks in the eBook. Materials include information about the incorporation of developmentally appropriate advanced software through PASCO's products.
- The materials provide developmentally appropriate digital resources for the course. The list of physics TEKS in the back of the book includes hyperlinks to the page where they are taught and assessed. For example, TEKS 8Fi is found on Pages 770-772 and page 768 and includes digital models, graphics, and simulations that are developmentally appropriate for learning about emission spectra.
- The materials provide digital technology aligned with the course scope and sequence. The list of lessons at the front of the book includes hyperlinks to their specific section. The pacing guide page references the 139 lessons that the book covers and includes hyperlinks to the lessons. The pacing guide lists the number of lessons taught in each unit and how long they take.
- The TEKS Physics Standard Correlations to Content and Assessment show the standards for each TEKS and link to pages with all of the digital and online tools that are for educational use. Standard Correlations to Content and Assessment links to an activity that guides the student to build a microscope and adds questioning and an interactive slideshow that accompanies it.

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

- The materials include directions for using embedded technology for differentiating instruction, using technology to promote collaboration, and incorporating multimedia resources into lessons. For example, in lesson plans, each lesson component uses an icon that identifies the type of differentiated instruction. Directions in the User's Guide provide clear how-to instructions for "Teach with Practice Problems in Interactive Equations."
- The materials provide support for teachers to successfully integrate the technology within the program. For example, the user guide for the text found under the help menu provides guidance on each embedded component and how to integrate it into the course. The materials provide specific teacher guidance for embedding technology within lessons. For example, in the lesson plan and the PowerPoint for each lesson, each component is broken down on what to use within the lesson, including the interactive calculator, simulations, and videos.
- The materials provide teacher guidance on using technology. The User Guide pdf that teachers can download explains how the technology is used in the course. The User Guide provides pictures with text boxes to help teachers understand what the students will be seeing on their end. The materials provide a list of the technology available for lessons. In the lesson plan for Chapter 2, the materials/technology resources listed include three interactive calculators of Density, Scientific notation equation, and Converting time from mixed units. Below that, in the lesson plan segments, it says that "students will explore the concepts presented in the lesson through three interactive calculators" and then lists their names. Powerpoints for the chapter have guidance about how to do the interactives.
- The Assessment portion of the Pasco Essential Physics Users Guide provides a detailed and thoroughly in-depth walkthrough that shows a teacher every aspect of creating, administering, and collecting data from tests. The test bank area of the user guide shows a step-by-step process in which the teacher takes TEKS, standards, and previous items, and they can digitally build an assessment with different versions available for classroom use.

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

- The materials do not include support for parents and caregivers on how to support student engagement with digital technology or online components. For example, materials do not include a letter with tips to families on how to support appropriate student engagement with digital and online components.
- The User Guide, if available to parents and caregivers, would give the same information and assistance that teachers get. The features of the e-book section of the user guide, if available to parents/caregivers, can serve as a very useful resource for navigation of the book, setup of the apps on devices, etc. The materials could help support student engagement with digital technology and online components. However, an e-letter isn’t provided for online access to materials, resources, or activities to reinforce student learning and development.
- The materials do not state that they can be accessed by caregivers. The materials also do not provide online videos demonstrating investigations or experiments for caregivers to do with students at home or support student progress.