DEPARTMENT of EDUCATION
Louisiana Believes

Instructional Materials Evaluation Tool for Alignment in Science Grades K – 12 (IMET)

FULL CURRICULUM
Instructional Materials

Strong science instruction requires that students:

- Apply content knowledge to explain real world phenomena and to design solutions,
- Investigate, evaluate, and reason scientifically, and
- Connect ideas across disciplines.

Title: **Amplify Science Louisiana** Grade/Course: **K-5**

Publisher: **Amplify Education, Inc.** Copyright: **2019**

Overall Rating: **Tier I, Exemplifies quality**

Tier I, Tier II, Tier III Elements of this review:

STRONG	WEAK
1. Three-dimensional Learning (Non-negotiable)	
2. Phenomenon-Based Instruction (Non-negotiable)	
3. Alignment & Accuracy (Non-negotiable)	
4. Disciplinary Literacy (Non-negotiable)	
5. Learning Progressions	
6. Scaffolding and Support	
7. Usability	
8. Assessment	

Each set of submitted materials was evaluated for alignment with the standards beginning with a review of the indicators for the non-negotiable criteria. If those criteria were met, a review of the other criteria ensued.

Tier 1 ratings receive a "Yes" for all Non-negotiable Criteria and a "Yes" for each of the Additional Criteria of Superior Quality.
Tier 2 ratings receive a "Yes" for all Non-negotiable Criteria, but at least one "No" for the Additional Criteria of Superior Quality.
Tier 3 ratings receive a "No" for at least one of the Non-negotiable Criteria.

Click below for complete grade-level reviews:

Grade K (Tier 1) Grade 1 (Tier 1) Grade 2 (Tier 1) Grade 3 (Tier 1) Grade 4 (Tier 1) Grade 5 (Tier 1)

Strong science instruction requires that students:

- Apply content knowledge to explain real world phenomena and to design solutions,
- Investigate, evaluate, and reason scientifically, and
- Connect ideas across disciplines.

Title: **Amplify Science Louisiana** Grade/Course: **K**

Publisher: **Amplify Education, Inc.** Copyright: **2019**

Overall Rating: **Tier I, Exemplifies quality**

Tier I, Tier II, Tier III Elements of this review:

STRONG	WEAK
1. Three-dimensional Learning (Non-Negotiable)	
2. Phenomenon-Based Instruction (Non-Negotiable)	
3. Alignment Accuracy (Non-Negotiable)	
4. Disciplinary Literacy (Non-Negotiable)	
5. Learning Progressions	
6. Scaffolding and Support	
7. Usability	
8. Assessment	

To evaluate each set of submitted materials for alignment with the standards, begin by reviewing the indicators listed in Column 2 for the non-negotiable criteria. If there is a "Yes" for all required indicators in Column 2, then the materials receive a "Yes" in Column 1. If there is a "No" for any required indicator in Column 2, then the materials receive a "No" in Column 1. Submissions must meet Criteria 1 and 2 for the review to continue to Criteria 3 and 4. Submissions must meet all of the non-negotiable criteria in order for the review to continue to Section II.

For Section II, begin by reviewing the required indicators in Column 2 for each criterion. If there is a "Yes" for all required indicators in Column 2, then the materials receive a "Yes" in Column 1. If there is a "No" for any required indicators in Column 2, then the materials receive a "No" in Column 1.

Tier 1 ratings receive a "Yes" in Column 1 for Criteria 1 – 8.
Tier 2 ratings receive a "Yes" in Column 1 for all non-negotiable criteria, but at least one "No" in Column 1 for the remaining criteria.
Tier 3 ratings receive a "No" in Column 1 for at least one of the non-negotiable criteria.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
SECTION I: NON-NEGOTIABLE CRITERIA: Submissions must meet Criteria 1 and 2 for the review to continue to Criteria 3 and 4. Submissions must meet all of the non-negotiable criteria in order for the review to continue to Section II.			
Non-Negotiable **1. THREE-DIMENSIONAL LEARNING:** Students have multiple opportunities throughout each unit to develop an understanding and demonstrate application of the three dimensions. ☒ Yes ☐ No	**REQUIRED** **1a)** Materials are designed so that students develop scientific content knowledge and scientific skills through interacting with the three dimensions of the science standards. The majority of the materials teach the science and engineering practices (SEP), crosscutting concepts (CCC) and disciplinary core ideas (DCI) separately when necessary but they are most often integrated to support deeper learning.	**Yes**	Materials are designed so that students develop specific content knowledge and scientific skills through interacting with the three dimensions of the science standards. The majority of materials integrate the Science and Engineering Practices (SEP), Crosscutting Concepts (CCC), and Disciplinary Core Ideas (DCI) to support deeper learning. In the Pushes and Pulls Unit, Chapter 1, students begin to develop an understanding of forces and motion by investigating a box model to help design a solution to the Class Pinball Machine (SEP, Planning and Carrying Out Investigations, Developing and Using Models). In Lesson 1.2, students play a game in which they roll the ball back and forth, showing how they exert force on an object in order to make it move. They observe a Movement slideshow (SEP, Obtaining, Evaluating, and Communicating Information), and then explain why objects moved using "because" sentence frames (CCC, Cause and Effect). In Lesson 1.3, students investigate (SEP, Planning and Carrying Out Investigations) forces by using one object to make the other object move. From this investigation students are able to explain that forces happen between objects (SEP, Engaging in Argument with Evidence). In Lesson 1.4, students build upon these concepts by using the terms Cause and Effect (CCC) to explain why objects move (SEP, Constructing Explanations). Students then investigate (SEP, Planning and Carrying out Explanations) how to make the pinball move in their box model by adding a rubber band launcher (SEP, Designing Solutions). In Lesson 1.5, they participate in a shared writing activity to explain (SEP, Constructing Explanations) what caused (CCC, Cause and Effect) the ball to start moving, developing the idea that "The pinball started to move because the

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			launcher exerted a force on it” (DCI, LE.PS2B.a). In the Needs of Plants and Animals Unit, Lesson 1.4, students make observations (SEP, Obtaining, Evaluating, and Communicating Information) about the food that animals from around the world eat in a station rotation. Students discuss their observations and then identify Patterns (CCC) among the animals, such as all animals need food to live (DCI LE.LS1C.a). In the Sunlight and Weather Unit, Lessons 2.1-2.2, students engage activities to answer the question “Why does Earth’s surface get warm?” The students engage in a discussion about Cause and Effect (CCC) while trying to make predictions about why the Earth’s surface gets warm. Students collect and analyze data from the Warming Model (SEP, Developing and Using Models) to determine if the sun's light affects (CCC, Cause and Effect) the temperature of Earth's surface (DCI LE.PS3B.a).
Non-Negotiable **2. PHENOMENON-BASED INSTRUCTION:** Explaining phenomenon and designing solutions drive student learning. ☒ Yes ☐ No	**REQUIRED** **2a)** Observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning a majority of the time.	**Yes**	Observing and explaining phenomena and designing solutions provides the purpose and opportunity for students to engage in learning a majority of the time. For example, in the Pushes and Pulls Unit, students take on the role of pinball engineers and are tasked with designing a pinball machine for the class. This serves as the anchor phenomenon for the unit and provides purpose and opportunity for students to engage in the lessons that follow. In Chapter 1, students investigate starting movement and make connections between forces and motion. Students engage in a design cycle and design a launcher for their class pinball machine. In Chapter 2, students investigate the relationship between the strength of a force exerted on an object and the distance an object moves. The students add a new launcher to the class pinball machine and discuss how certain forces cause the ball to move various distances

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			based on the strength of force exerted on the ball. In Chapter 3, students investigate what kinds of forces move objects to the left and right. Students add a target to the class pinball machine and develop an understanding that every force has a certain strength and a direction that affects the distance and direction an object will move. In Chapter 4, students gather evidence to see what forces might cause an object to change directions through hands on investigations, reading for information, and testing their newly developed ideas on their box model. In Chapter 5, students redesign their box models and write a mini book explaining how to use forces to play pinball in their box model, connecting back to the anchor phenomenon. In Chapter 6, students use their experience of designing the pinball machine and what they have learned about forces causing objects to start moving, stop moving, and change directions and apply these ideas to the world around them by finding evidence of forces around the school. In the Needs of Plants and Animals Unit, students take on the role of scientists to determine why the monarch population has disappeared from the garden and then generate possible solutions for their restoration. Identifying the problem and generating a solution provides the purpose and opportunity for learning throughout the unit. As students work through the unit, they engage in learning experiences to answer the questions, “Why are there no monarch caterpillars since the Field was made into the Garden? Why did two milkweed seeds become plants, but the others did not? Why do the milkweed plants that get water grow differently? and How do we make the Garden a place where monarch caterpillars can live again?” In doing so, the students provide a solution to the disappearing monarch caterpillar problem presented as the anchor phenomenon at the start of the unit. In the process, students develop an understanding of plant and animal growth, needs, and structures. Students also learn the impact

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			humans can have on the natural world and develop solutions to reduce the impact of humans on the environment and living things within the environment. There is opportunity for improvement in the approach to phenomena throughout the materials. Materials often call for the teacher to visibly post a unit question prior to students' exposure to a phenomenon, and often, unit and chapter questions or problems are identified for students without explicit embedded opportunity for them to first generate these (or similar) questions and problems on their own.
Non-Negotiable (only reviewed if criteria 1 and 2 are met) **3. ALIGNMENT & ACCURACY:** Materials adequately address the Louisiana Student Standards for Science. ☒ Yes ☐ No	**REQUIRED** **3a)** The majority of the Louisiana Student Standards for Science are incorporated, to the full **depth of the standards**.	**Yes**	The majority, 9 out of 10 or 90% of the Louisiana Student Standards for Science are incorporated to the full depth of the standards. K-ESS3-2 is not incorporated to the full depth of the standard. The performance expectation for K-ESS3-2 requires that students ask questions to obtain information about the purpose of weather forecasting to prepare for and respond to severe weather. According the to the Correlation Document this standards is addressed in lessons 5.1, 5.2, and 5.5 of the Sunlight and Weather Unit. In Lesson 5.1, students listen to the story Tornado! Predicting Severe Weather. In this story, students are introduced to a weather scientist who uses tools to collect data about weather, then uses the data to make predictions. In the story, the scientist uses her weather data to predict a hurricane. She warns the people, and they take precautions to be safe. After reading the story, students participate in a Think and Walk activity in which they identify weather as severe or not severe and reflect on how weather affects (CCC) people in the story, in the pictures, and in their own area. Students are then introduced to the problem of flooding at the fictitious Woodland Elementary School. In Lesson 5.2, students investigate flooding at this school. In Lesson 5.5, students create a severe weather safety post which

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			addresses the DCI for this standard. Throughout the lessons, the students are not provided the opportunity to ask questions as required by the SEP and PE.
	REQUIRED **3b)** Science content is **accurate**, reflecting the most current and widely accepted explanations.	**Yes**	The majority of the content is accurate and up-to-date, reflecting the most current and widely accepted explanations. No evidence of incorrect or out of date science explanations could be found.
	3c) In any one grade or course, instructional materials spend minimal time on content outside of the course, grade, or grade-band.	**Yes**	The instructional materials spend minimal time on content outside of the grade-band.
Non-Negotiable (only reviewed if criteria 1 and 2 are met) **4. DISCIPLINARY LITERACY:** Materials have students engage with authentic sources and incorporate speaking, reading, and writing to develop scientific literacy. ☒ Yes ☐ No	**REQUIRED *Indicator for grades 4-12 only** **4a)** Students regularly engage with **authentic sources** that represent the language and style that is used and produced by scientists; e.g., journal excerpts, authentic data, photographs, sections of lab reports, and media releases of current science research. Frequency of engagement with authentic sources should increase in higher grade levels and courses.	**N/A**	
	REQUIRED **4b)** Students regularly engage in **speaking and writing** about scientific phenomena and engineering solutions using authentic science sources; e.g., authentic data, models, lab investigations, or journal excerpts. Materials address the necessity of using **scientific evidence** to support scientific ideas.	**Yes**	Students regularly engage in speaking and writing about scientific phenomena and engineering solutions using authentic science sources. The materials address the necessity of using scientific evidence to support scientific ideas. For example, in the Needs of Animals and Plants Unit, Lesson 1.7, students use an Explanation Sentence Frame to explain to a partner why the monarch butterfly cannot live in the garden and why the monarch butterfly can live in a field. Then the students participate in a Shared Writing activity with the teacher. Students share the explanations they discussed. The teacher synthesizes the answers and models how to generate a written explanation such as, “Monarch caterpillars can live there because the milkweed plants they need are there.” In the Sunlight and Weather Unit, Lesson 2.4, the

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			teacher reminds students that they have noticed an effect, "the playgrounds are warmer in the daytime than during the nighttime." Students turn and talk to their partners to explain the cause for this effect. Then students use a Language Frame to construct a written explanation for the principals of Carver and Woodland Elementary Schools explaining why the playgrounds are cooler in the nighttime than in the daytime and determine that "the surfaces are cooler because sunlight is not shining on them." In the Pushes and Pulls Unit, Lesson 2.3, students participate in a Shared Listening routine with a partner to answer the questions, "What did we do to make the pinball move a short distance?" and "Why did that make the pinball move a short distance?" Students repeat the routine answering the same questions about a long distance. Finally, students use an Explanation Language Frame and engage in a Shared Writing activity to construct the explanations *"it moved a short distance because the force was gentle,"* and "it moved a long distance because the force was strong."
	REQUIRED **4c)** There is **variability** in the tasks that students are required to execute. For example, students are asked to produce solutions to problems, models of phenomena, explanations of theory development, and conclusions from investigations.	**Yes**	There is variability in the tasks that students are required to execute throughout the instructional materials. Students are asked to engage in a variety of tasks including producing solutions to problems, using and developing models of phenomena, constructing explanations of theory development, and drawing conclusions from investigations. In the Pushes and Pulls Unit, Lesson 2.3, students create two diagrams to model their solution to changing the distance the ball moves in the box model. Students create one diagram that models how they moved the ball a shorter distance in the box model, and create another diagram that models how they moved the ball a longer distance in the box model. In the Needs of Plants and Animals Unit, Lesson 1.7, students conduct an investigation to determine if a

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			garlic plant needs water to live and grow. Students place one clove of garlic is an empty cup while they place another clove of garlic in a cup of water. Students use illustrations to record their observations of the garlic plants' growth in their investigative notebook. In the Sunlight and Weather Unit, Lesson 2.1 students conduct a hands on investigation to determine how the sun's light affects the surface of the earth. Using a lamp to represent the sun and a rubber mat to represent Earth's surface, students measure the temperature of the rubber with the light off (representing night) and with the light on (representing day). Students record the data in their investigative notebooks. After analyzing their data, students conclude that the sun's light causes Earth's surface to be warmer.
	4d) Materials provide a coherent sequence of authentic science sources that build scientific **vocabulary** and knowledge over the course of study. Vocabulary is addressed as needed in the materials but not taught in isolation of deeper scientific learning.	**No**	Vocabulary is presented throughout the unit as needed, but students are often told definitions and do not have the opportunity to create meanings for themselves. Definitions are frontloaded before activities, with students missing the opportunity to develop their meanings as they engage in the work. For example, in the Sunlight and Weather Unit, Lesson 1.2, the teacher introduces the new vocabulary word "temperature." The teacher provides the definition and then leads the class in a vocabulary routine in which they practice saying the word and definition together. The word is also posted on the vocabulary wall. The students are not given an opportunity to develop the definition on their own. In Lesson 1.4, "data" and "investigation" are introduced similarly where the teacher introduces the words and provides the definition. Students are introduced to the word "graph" and are given its definition, then work with a graph about weather data. In the Needs of Plants and Animals Unit, Lesson 1.5, students are introduced to new vocabulary

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			"habitat." Students follow the routine of pronouncing and defining the new term, then examine images of different habitats to identify the food that each provides to organisms that live there.
SECTION II: ADDITIONAL INDICATORS OF QUALITY			
Additional Criterion **5. LEARNING PROGRESSIONS:** The materials adequately address Appendix A: Learning Progressions. They are coherent and provide natural connections to other performance expectations including science and engineering practices, crosscutting concepts, and disciplinary core ideas; the content complements the the Louisiana Student Standards for Math. ☒ Yes ☐ No	**REQUIRED** **5a)** The overall organization of the materials and the development of disciplinary core ideas, science and engineering practices, and crosscutting concepts are coherent within and across units. The **progression of learning** is coordinated over time, clear and organized to prevent student misunderstanding and supports student mastery of the performance expectations.	**Yes**	The lessons within and across each unit are organized to support learning through a natural progression. Students engage with and build an understanding of the three dimensions of the standards at increasing levels of complexity and sophistication and engage in a coherent progression of learning that is coordinated over time, clear, and organized. Each unit is built around a bundle of performance expectations with the phenomena driving the instruction forward throughout the unit. Documents, including the "Progress Build" document, help teachers see the learning progression students go through in their development of ideas and knowledge as related to the central phenomenon. For example, in the Pushes and Pulls Unit, students first develop the understanding that an object begins moving when acted upon by a force. Students investigate (SEP, Planning and Conducting Investigations) starting movement by engaging in several hands on activities and observing a movement slideshow. Students utilize their observations to Construct Explanations (SEP) by using sentence frames to describe the Cause and Effect (CCC) of how the objects began to move (DCI, LE.PS2A.b). Students deepen their understanding as they discover that stronger forces make objects move farther and that objects move in the direction forces propel them. Students use their box Model (SEP) to test how to create strong and gentle forces with the launcher (CCC, Cause and Effect; DCI, LE.PS2A.a). They use these results to design a new launcher for their class pinball machine (SEP, Designing Solutions). Finally, students gather

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			evidence (Obtaining, Evaluating, and Communicating Information) through observations and reading for information and discover that moving objects change direction when they encounter obstacles or when an alternate force acts on them (CCC, Cause and Effect; DCI, LE.PS2A.b). In the Sunlight and Weather Unit, students first develop the understanding that surfaces get warm when sunlight shines on them and that increased exposure to sunlight increases the temperature of the surface (CCC, Cause and Effect). Student investigations (SEP, Planning and Conducting Investigations) then lead them to a deeper understanding of the sun's ability to warm Earth's surface as they discover that darker surfaces get warmer than lighter surfaces when exposed to sunlight. This progression of learning addresses DCI, LE.PS3B.a. In the Needs of Plants and Animals Unit, students begin to develop an understanding that growth is evident by an increase in size or number of parts (CCC, Patterns). Through investigations (SEP, Planning and Conducting Investigations), students then discover that plants use their roots to get the water they need to grow, and, finally, that plants use their leaves to get the sunlight they need to grow (DCI, LE.LS1C.a; CCC, Systems and System Models).
	5b) Students apply mathematical thinking when applicable. They are not introduced to math skills that are beyond the applicable grade's expectations in the Louisiana Student Standards for Mathematics. Preferably, **math connections** are made explicit through clear references to the math standards, specifically in teacher materials.	**Yes**	Students apply mathematical thinking when applicable. They are not introduced to math skills that are beyond the grade's expectations. In addition, teachers can find supplemental math extension activities in the "Going Further: Mathematical Thinking notes" under the "Teacher Support" tab in several lessons. For example, in the Needs of Plants and Animals Unit, Lesson 2.2, students observe pictures of a radish plant taken over the course of its life cycle. Then, students count the number of leaves and the

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			height of the stem in each picture to determine the cardinal order or growth sequence of the plant. This activity supports Louisiana Student Standard for Math (LSSM) K.CC.B.4, count to tell the number of objects and connect counting to cardinality. In the Sunlight and Weather Unit, Lesson 1.4, students count the number of sunny, cloudy, rainy, and snowy days on the playgrounds of Carver Elementary and Woodland Elementary. Then, they compare the numbers to see if there are any differences. This activity supports LSSM K.CC.B.5, count to tell the number of objects, and K.CC.C.7, compare numbers. Later in Lesson 2.2, students use a graphical representation to compare the temperature of a rubber surface with no light shining on it to the temperature of a rubber surface with light shining on it. This activity supports LSSM K.MD.A.2, describe and compare measurable attributes. In the Pushes and Pulls Unit, Lesson 2.3, students create a model diagram to represent the short distance and long distance that a ball rolled. This activity supports LSSM K.MD.A.1, describe and compare measurable attributes. In Lesson 3.4, students identify shapes and numbers on a target. This activity supports LSSM K.G.A, identify and describe shapes.
Additional Criterion **6. SCAFFOLDING AND SUPPORT:** Materials provide teachers with guidance to build their own knowledge and to give all students extensive opportunities and support to explore key concepts using multiple, varied experiences to build scientific thinking.	**REQUIRED** **6a)** There are separate **teacher support** materials including: scientific background knowledge, support in three-dimensional learning, learning progressions, common student misconceptions and suggestions to address them, guidance targeting speaking and writing in the science classroom (i.e. conversation guides, sample scripts, rubrics, exemplar student responses).	**Yes**	There are separate teacher support materials that include scientific background knowledge, support in three-dimensional learning, learning progressions, and specific tips to enhance the delivery of the lessons. Exemplar student responses are also included. The "Planning for the Unit" section located at the onset of each unit provides multiple supports for teachers. The Unit Overview gives a summary of the unit, the Unit Map outlines the driving question and how it is answered in each chapter, and the Progress Build describes the way in which students'

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☒ Yes ☐ No			explanations of the central phenomenon should develop and deepen over the course of the unit. This section also includes Materials and Preparation that lists all of the materials provided by kit as well as those that are to be provided by the teacher. Getting Ready to Teach outlines tasks the teacher needs to do to prepare ahead of time (such as printing needed posters and copies, organizing students into groups or partners) and offers suggestions for classroom management during activities and during clean up. The Standards at a Glance section lists Louisiana Student Standards for Science, ELA, and Math. The Teacher Supports tab within each lesson includes topics such as background information, pedagogical goals, and instructional suggestions that may include ideas for management, providing more support, extensions, or how to address specific misconceptions. The Science Background section provides teachers with background knowledge on the three dimensions covered within the unit and notes preconceptions students may have that could interfere with learning. For example, in the Pushes and Pulls Unit the differences between force, energy, and momentum are explained, as is the fact that forces always occur in pairs such as friction and inertia, and how forces impact the motion of objects (DCIs) is described. It further explains the rationale for and provides a description of engineering and design (SEP), and explains the interdependent relationship between causes and effects (CCC). Additional notes on preconceptions warn teachers that students may struggle to differentiate between pushes and pulls that do not result in motion. For this reason, students are not asked to classify motion as a push or pull within the unit. An example of instructional suggestions is evidenced in Lesson 5.1 offering the strategic grouping of students and use of small groups for diverse learners as students draw diagrams of their box models.

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			Student exemplars are embedded within the unit materials to assist teachers in formatively assessing student understanding. For example, in the Needs of Plants and Animals Unit, Lesson 3.3, a student exemplar or look for responses are provided after teacher questions to help teachers check for understanding. A "say" icon indicates a teacher question, "What is our evidence that plants need light to live and grow?" Student exemplar responses are indicated with [ ] [e.g., We compared our sunflower plants. The one with no light did not grow well. We read it in a book].
	6b) Appropriate suggestions and materials are provided for **differentiated instruction** supporting varying student needs at the unit and lesson level (e.g., alternative teaching approaches, pacing, instructional delivery options, suggestions for addressing common student difficulties to meet standards, etc.).	**Yes**	Appropriate suggestions and materials are provided for differentiated instruction to support varying student needs at the unit and lesson level. Each lesson includes a section titled Differentiated Instruction. Suggestions are given for students struggling, English Learners, and those who need extension. There are specific suggestions for each lesson under the tab labeled Teacher Support within the online Instructional Guide that contain instructional suggestions, including time management, extensions, and clarification of misconceptions. For example, in the Sunlight and Weather Unit, Lesson 4.1, embedded diverse learner supports include suggestions for accessing prior knowledge, rereading for a purpose, and kinesthetic activity. The material guidance explains that students can mentally prepare for the lesson by discussing possible answers to the question they will be investigating, "Why does one surface get warmer than another, when sunlight shines on them for the same amount of time?" Additionally, by making and checking predictions while rereading Getting Warm in the Sunlight with the explicit purpose of finding out why some surfaces get warmer than others, students can deepen their understanding of the content. Finally, teachers can differentiate for

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			kinesthetic learners by incorporating the Warmer and Cooler Movement Routine by having students act out the changes in the temperature of different surfaces over the course of a day. In the Pushes and Pulls Unit, Lesson 3.1, teachers are reminded that young learners, especially English learners, may struggle to differentiate between directional words such as "left" and "right." To address this potential problem, it is suggested that teachers acknowledge that these words have multiple meanings, that they use each word in a sentence such as, "this is my right hand," and that they have students identify objects and body parts located in the direction of each word. Suggestions for students who need more challenge are also included. In the Needs of Plants and Animals Unit, Lesson 3.4, the materials suggest that students illustrate and label observations of plants and animals getting what they need from their habitat as they preview the text "Above and Below."
Additional Criterion **7. USABILITY:** Materials are easily accessible, promote safety in the science classroom, and are viable for implementation given the length of a school year. ☒ Yes ☐ No	**REQUIRED** **7a)** Text sets (when applicable), laboratory, and other scientific materials are **readily accessible** through vendor packaging.	**Yes**	Text sets, laboratory, and other scientific materials are readily accessible through vendor packaging. Students have access to student apps and text through the digital platform. Each unit contains an Investigation Notebook which contains needed materials for the unit. Each unit incorporates reference books that are incorporated into the lesson. These books are accessible as eBooks. Packaged kits are also available for purchase. All needed supplies for each lesson are listed at the beginning of each unit in the Planning for the Unit section under the heading Materials and Preparation. For example in the Sunlight and Weather Unit, student texts such as Handbook of Models, Cool People in Hot Places, Tornado! Predicting Severe Weather, What Is the Weather Like Today? and Getting Warm in the Sunlight are available in vendor

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			packaging or for display through vendor links. Additional resources are provided at the lesson level as lesson projections, such as the Warming Graph, the What Scientists Do chart, and the Class Playground Temperature Chart. These lesson projections are available for digital display or in PDF form for printing in support of the objectives in Lesson 2.2. Lab materials are also available. A list of provided and unprovided materials can be found at the beginning of each unit. For example, in the Pushes and Pulls Unit, a list of kit materials is provided for the unit to be taught in full twice to 36 students. The list is provided in a table and includes the number of items needed and the lesson that the materials are needed for.
	7b) Materials help students build an understanding of standard operating procedures in a science laboratory and include **safety** guidelines, procedures, and equipment. Science classroom and laboratory safety guidelines are embedded in the curriculum.	**Yes**	Materials help students build an understanding of standard operating procedures in a science laboratory and include safety guidelines, procedures, and equipment. Science classroom and laboratory safety guidelines are embedded in the curriculum. For example, within the Investigation Notebook for each unit, safety guidelines are addressed on page 1. Safety notes such as “Don’t taste things,” “Smell things like a Chemist,” and “Protect your eyes” are given. Additional safety notes are located within the lessons. Additional safety procedures are called out as needed within lessons. For example, in the Needs of Plants and Animals Unit, Lesson 1.3, a safety warning appears at the beginning of the lesson reminding teachers to warn students not to touch any animals or poisonous plants during their Science Walk. In Lesson 3.1, another safety warning appears in the lesson reminding teachers to tape the cord of the grow light to the floor to prevent students from tripping and to caution students never to touch or look directly into the grow light as it could be dangerous to their hands and eyes.

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			In the Sunlight and Weather Unit, Lesson 2.1, Part 2, it is suggested that teachers remind students that for safety reasons they should not touch the lamp representing the sun in the Warming Model setup. In the Pushes and Pulls Unit, Lesson 1.4, it is suggested that teachers set expectations for safe use of materials by cautioning students "not stretch the rubber band too far or let go of it while stretched" and "to keep the rubber band away from their face, especially their eyes" as they are testing ideas with the box model. In the following activity, the teacher introduces the investigation notebook for the unit and projects and reviews the Safety Guidelines for science investigations.
	7c) The total amount of content is **viable** for a school year.	**Yes**	The total amount of content is viable for a school year. The materials contain 3 units of study. There are 22 lessons in each unit which are approximately 45 minutes in length. The materials provide suggested time allotments for each stage of each lesson to assist teachers with planning and time management, making the content viable for a school year.
Additional Criterion **8. ASSESSMENT:** Materials offer assessment opportunities that genuinely measure progress and elicit direct, observable evidence of the degree to which students can independently demonstrate the assessed standards. ☒ Yes ☐ No	**REQUIRED** **8a) Multiple types** of formative and summative assessments (performance-based tasks, questions, research, investigations, and projects) are embedded into content materials and assess the learning targets.	**Yes**	Multiple types of formative and summative assessments are embedded into content materials and assess the learning targets. Formative assessments, such as pre-unit assessments, on the fly assessments, self-assessments, and critical juncture writing assessments are included in each unit. End of Unit Assessments and rubrics are also provided. The materials provide an "Assessment System" document at the beginning of each unit which notes the lesson, the assessment opportunities, the science standards involved in the task organized by the three dimensions, and evaluation guidance. In addition, the unit's "Progress Build" section "describes the way students' understanding of the unit content should develop and deepen through engagement with the unit's learning experiences."

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			Assessment focuses are also provided on the "At a Glance" tables for the "Critical Juncture" Assessments and "On-the-Fly" Assessments for each unit. For example, in the Needs of Plants and Animals Unit, Lesson 1.1, students engage in a Shared Listening conversation in which they attempt to explain how plants and animals get what they need to live and grow. The teacher listens carefully to student responses to this question based Pre-Unit assessment to gauge their performance level in the three dimensions as they attempt to construct an explanation for the question. Formative Critical Juncture Assessments are embedded within the unit. For example, in Lesson 2.2, such an assessment requires students to analyze the growth of three Milkweed plants to determine which grew the most and explain why. As students respond to this investigative assessment, the teacher listens carefully to their evidence to verify their understanding of DCI LE.LS1C.a and LE.ESS3A.a. On-the-Fly Assessments are also embedded. For example, in Lesson 4.3, students complete their garden planter plans. Teachers observe their choices in this project type assessment and evaluate their responses to how their plans will allow both humans and monarchs to meet their needs. Summative, End-of-Unit assessments are also available at the conclusion of each unit. For example, In the Pushes and Pulls Unit, Lesson 6.3, the teacher meets with students individually to play with the class pinball machine. As they play, the teacher prompts students to explain the interaction of forces and how they result in different motions. Students are expected to identify cause and effect of the different types of forces exerted on the ball. The summative assessments have minimal questions that do not assess all learning targets taught within the units.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
	REQUIRED **8b)** Assessment items and tasks are structured on integration of the **three-dimensions**.	**Yes**	Assessment items and tasks are structured on integration of the three-dimensions. For example, in the Pushes and Pulls Unit, Lesson 1.4, students diagram the causes of movement. This On-the-Fly assessment task assesses students' ability to Use Models (SEP) to explain how the location of the launcher affected (CCC, Cause and Effect) the motion of the ball (DCI LE.PS2A.a) in the pinball box model. In the Sunlight and Weather Unit, Lesson 4.3, students participate in a Think and Walk activity in which they evaluate different surfaces to determine which is warmer when exposed to the sun's light and then explain their reasoning. This Critical Juncture assessment assesses students' ability to Analyze Data and Construct Explanations (SEP) for the way color affects (CCC, Cause and Effect) how sunlight warms surfaces on earth (DCI LE.PS3B.a) In the Needs of Plants and Animals Unit, Lesson 4.1, students construct a Mini-book to communicate what they have learned. This illustrated assessment assesses students' ability to communicate (SEP, Obtaining, Evaluating, and Communicating Information) the monarch butterfly's dependence (CCC, System and System Models) on the Milkweed plant to provide what it needs to live and grow in its habitat (DCI LE.ESS3A.a).
	8c) Scoring guidelines and rubrics **align** to performance expectations, and incorporate criteria that are specific, observable, and measurable.	**Yes**	Scoring guidelines and rubrics align to performance expectations, and incorporate criteria that are specific, observable, and measurable. Student Look Fors and Possible Student Responses are given to guide teachers in assessment of student understanding. For example, in the Sunlight and Weather Unit, Lesson 1.4, an exemplar response is provided for a Shared Writing activity comparing the weather at the Carver and Woodland Elementary School playgrounds. According to the completed exemplar,

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			student responses should indicate that the types of weather on the two playgrounds are the same, but the temperature on the two playgrounds is different. This formative assessment is specific, observable, qualitatively measurable and aligned with PE K-PS3-1. Since students will continue to have opportunities to demonstrate understanding throughout the unit, no quantitative value is placed on it. In the Needs of Plants and Animals Unit, Lesson 2.2, a Clipboard Assessment Tool is provided to assess students' responses to a hands-on activity in which they sequence the growth of a plant. The tool provides teachers with questions to ask students to check for understanding, "You put your cards in this order. Why do you think putting the cards in this order shows how the plant grew?" as well as what to look for in student responses to measure understanding. This formative assessment is also specific, observable, qualitatively measurable, and aligned to PE K-LS1-1. In the Pushes and Pulls Unit, 3 Rubrics are provided to assist with scoring the End-of-Unit Assessment aligned with PE K-PS2-1. Rubric 1 assesses students' understanding of science concepts within the unit. Rubric 2 assesses students' understanding of the CCC, Cause and Effect. Rubric 3 assesses students' understanding of the scientific practice of supporting an answer with evidence (SEP, Engaging in Argument with Evidence). Each rubric provides specific criteria for evaluating student learning. A 5 point quantitative evaluation scale (0-4) is provided to assist with grading purposes along with criteria for assigning numerical values to student performance.

FINAL EVALUATION

Tier 1 ratings receive a "Yes" in Column 1 for Criteria 1 – 8.

Tier 2 ratings receive a "Yes" in Column 1 for all non-negotiable criteria, but at least one "No" in Column 1 for the remaining criteria.

Tier 3 ratings receive a "No" in Column 1 for at least one of the non-negotiable criteria.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
Compile the results for Sections I and II to make a final decision for the material under review.			
Section	**Criteria**	**Yes/No**	**Final Justification/Comments**
I: Non-Negotiables	1. Three-dimensional Learning	**Yes**	Materials are designed so that students develop scientific content knowledge and scientific skills through interacting with the three dimensions of the science standards. The majority of materials integrate the science and engineering practices, crosscutting concepts, and disciplinary core ideas to support deeper learning.
	2. Phenomenon-Based Instruction	**Yes**	Observing and explaining phenomena and designing solutions provides the purpose and opportunity for students to engage in learning a majority of the time. There is opportunity for improvement in the approach to phenomena throughout the materials.
	3. Alignment & Accuracy	**Yes**	The majority, 9 out of 10 or 90% of the Louisiana Student Standards for Science are incorporated to the full depth of the standard. K-ESS3-2 is not incorporated to the full depth of the standard. Minimal time is spent on content outside of the grade band.
	4. Disciplinary Literacy	**Yes**	Students participate in a variety of tasks that help them develop a deeper understanding of science content. Students develop models, complete investigative tasks, and regularly speak and write as they draw conclusions and make claims supported by scientific evidence. Vocabulary is presented throughout the unit as needed, but students are often told definitions and do not have the opportunity to create meanings for themselves.
II: Additional Indicators of Quality	5. Learning Progressions	**Yes**	The overall organization of the materials supports student mastery of the standards. The progression of learning for the Disciplinary Core Ideas are coherent and organized to ensure student mastery.
	6. Scaffolding and Support	**Yes**	There are separate teacher support materials and appropriate suggestions for multiple types of learners within the materials.
	7. Usability	**Yes**	Text sets, laboratory, and other scientific materials are readily accessible through vendor packaging. Safety notes and guidelines are embedded within the curriculum and a viable amount of material is

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			provided to be completed within the school year.
	8. Assessment	**Yes**	Formative and summative assessments that assess the learning targets are included within the curriculum. Assessment tasks are structured on integration of the three-dimensions and scoring guidelines align to performance expectations.
FINAL DECISION FOR THIS MATERIAL: **Tier I, Exemplifies quality**			

Strong science instruction requires that students:

- Apply content knowledge to explain real world phenomena and to design solutions,
- Investigate, evaluate, and reason scientifically, and
- Connect ideas across disciplines.

Title: **Amplify Science Louisiana** Grade/Course: **1**

Publisher: **Amplify Education, Inc.** Copyright: **2019**

Overall Rating: **Tier I, Exemplifies quality**

Tier I, Tier II, Tier III Elements of this review:

STRONG	WEAK
1. Three-dimensional Learning (Non-Negotiable)	
2. Phenomenon-Based Instruction (Non-Negotiable)	
3. Alignment Accuracy (Non-Negotiable)	
4. Disciplinary Literacy (Non-Negotiable)	
5. Learning Progressions	
6. Scaffolding and Support	
7. Usability	
8. Assessment	

To evaluate each set of submitted materials for alignment with the standards, begin by reviewing the indicators listed in Column 2 for the non-negotiable criteria. If there is a "Yes" for all required indicators in Column 2, then the materials receive a "Yes" in Column 1. If there is a "No" for any required indicator in Column 2, then the materials receive a "No" in Column 1. Submissions must meet Criteria 1 and 2 for the review to continue to Criteria 3 and 4. Submissions must meet all of the non-negotiable criteria in order for the review to continue to Section II.

For Section II, begin by reviewing the required indicators in Column 2 for each criterion. If there is a "Yes" for all required indicators in Column 2, then the materials receive a "Yes" in Column 1. If there is a "No" for any required indicators in Column 2, then the materials receive a "No" in Column 1.

Tier 1 ratings receive a "Yes" in Column 1 for Criteria 1 – 8.

Tier 2 ratings receive a "Yes" in Column 1 for all non-negotiable criteria, but at least one "No" in Column 1 for the remaining criteria.

Tier 3 ratings receive a "No" in Column 1 for at least one of the non-negotiable criteria.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
SECTION I: NON-NEGOTIABLE CRITERIA: Submissions must meet Criteria 1 and 2 for the review to continue to Criteria 3 and 4. Submissions must meet all of the non-negotiable criteria in order for the review to continue to Section II.			
Non-Negotiable **1. THREE-DIMENSIONAL LEARNING:** Students have multiple opportunities throughout each unit to develop an understanding and demonstrate application of the three dimensions. ☒ Yes ☐ No	**REQUIRED** **1a)** Materials are designed so that students develop scientific content knowledge and scientific skills through interacting with the three dimensions of the science standards. The majority of the materials teach the science and engineering practices (SEP), crosscutting concepts (CCC) and disciplinary core ideas (DCI) separately when necessary but they are most often integrated to support deeper learning.	**Yes**	Materials are designed so that students develop specific content knowledge and scientific skills through interacting with the three dimensions of the science standards. The majority of materials integrate the Science and Engineering Practices (SEP), Crosscutting Concepts (CCC), and Disciplinary Core Ideas (DCI) to support deeper learning. In the Animal and Plant Defenses Unit, Chapter 3, students use multiple sources such as Parent and Offspring Activity Cards (Lesson 3.1), the *Parents and Offspring* text (Lesson 3.2), the Parent and Offspring Defenses video (Lesson 3.3), and the Offspring Signals videos (Lesson 3.5) to Obtain scientific Information (SEP) to determine Patterns (CCC) related to the behaviors and structures (CCC, Structure and Function) of parents and offspring and how they use these behaviors and structures to survive (DCI LE.LS1B.a). In the Light and Sound Unit, Lesson 2.1, students explore making shadows by placing objects between a light source and a surface. Students identify Cause and Effect (CCC) relationships as they make shadows of different shapes and sizes. For example, "[w]e put our hand in front of the light (cause), so we see a shadow (effect)." In Lesson 2.3, students Carry Out an Investigation (SEP) to determine which materials block light from reaching a surface. Both lesson activities address DCI LE.PS4B.b. In the Spinning Earth Unit, Lesson 3.1, students make observations of the sun at different times of the day to observe the Patterns (CCC) of the movement of the sun (DCI, LE.ESS1.A.a). The observations are used to answer scientific questions

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			such as, "Where is the sun in the sky at different times?" and "Why does daytime change to nighttime?" (SEP, Analyzing and Interpreting Data).
Non-Negotiable **2. PHENOMENON-BASED INSTRUCTION:** Explaining phenomenon and designing solutions drive student learning. ☒ Yes ☐ No	**REQUIRED** **2a)** Observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning a majority of the time.	**Yes**	Observing and explaining phenomena and designing solutions provides the purpose and opportunity for students to engage in learning a majority of the time. For example, in the Animal and Plant Defenses Unit, students are introduced to a fictional sea turtle, Spruce, who lives in an aquarium and will soon be released back into the ocean. Students take on the role of a marine scientist as they investigate and explain to the aquarium's audience how the sea turtle and her offspring will survive, despite ocean predators, when released back into their natural habitat. This serves as the anchor phenomenon for the unit and provides purpose and opportunity for students to engage in the lessons that follow. In Chapter 1, students investigate how plants and animals use specific structures to meet their needs for survival and to defend themselves against predators to answer the question "How does Spruce the Sea Turtle do what she needs to survive?" In Chapter 2, students build upon their understanding of how animals and plants use specific structures to survive and work to answer the question, "How can Spruce the Sea Turtle survive where there are sharks?" Students gather evidence from reading books, observing videos, and making models to discover that turtles use their hard shell and camouflage colors as defenses against sharks. In Chapter 3, students dig deeper into the anchor phenomenon to investigate "How can Spruce the Sea Turtle's offspring survive where there are sharks?" Through observing pictures and videos, reading reference books, and engaging in role play activities, students conclude that the turtle's offspring will have similar body structures as their parents to defend themselves and that they also get help from their parents in order to survive. Finally, in Chapter 4, students extend their understanding of

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			plant and animal survival by evaluating several models and then developing their own to explain animal defenses to the aquarium's audience, connecting back to the anchor phenomenon of the unit. In the Light and Sound Unit, students are tasked to design, build, and then project a scene for a puppet show. This serves as the anchor phenomenon for the unit and provides purpose and opportunity to engage in the lessons that follow. As students work through the unit, they answer the questions, "How do we make brighter or darker areas? How do we make a dark area in a bright puppet show scene? How do we make bright, medium bright, and dark areas in a scene? and How do we design a sound source to go with a puppet show scene?" Students investigate cause and effect relationships, use patterns of lights to create effects, and discover that sound travels from a source and is caused by vibrations. By the end of the unit, students share their final solutions and explain how their scenes and sound sources work, connecting back to the anchor phenomenon of the unit. There is opportunity for improvement in the approach to phenomena throughout the materials. Materials often call for the teacher to visibly post a unit question prior to students' exposure to a phenomenon, and often, unit and chapter questions or problems are identified for students without explicit embedded opportunity for them to first generate these (or similar) questions and problems on their own.
Non-Negotiable (only reviewed if criteria 1 and 2 are met) **3. ALIGNMENT & ACCURACY:** Materials adequately address the Louisiana Student Standards for	**REQUIRED** **3a)** The majority of the Louisiana Student Standards for Science are incorporated, to the full **depth of the standards**.	**Yes**	The majority, 7 out of 9 or 78%, of the Louisiana Student Standards for Science are incorporated to the full depth of the standards. Standards 1-PS4-1 and 1-PS4-4 are not incorporated to the full depth of the standard. The performance expectation for LSS 1-PS4-1 requires that students plan and conduct

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Science. ☒ Yes ☐ No			investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate. In addition, the DCI states, "Sound can make matter vibrate and vibrating matter can make sound." In the Light and Sound Unit, Lesson 4.1, students plan how to investigate materials to see if they make sound. They investigate whether or not all sounds sources vibrate and read What Vibrates in Lesson 4.2. They design a sound source that vibrates to produce sound in Lesson 4.4. The focus of these activities is on the vibration of materials producing sound, not sound making matter vibrate. In Lesson 4.1, Activity 4, students read Engineering with Light and Sound to learn about sound sources. On page 28, students read about a lithotripter that sends sounds into a person's body, causing a vibration in order to break up hard pieces of material that sometimes form in a person's body. The rest of the section focuses on vibrations causing sound. In Lesson 4.3, Activity 1, the materials include an Instructional suggestion, "Going Further: Sound Can Cause Vibrations," in which the teacher demonstrates how sound can cause vibration. These two activities, one of which is an extension, do not provide the student enough opportunity to meet the full depth of the standard. The performance expectation for LSS 1-PS4-4 requires that students use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance. While working as light and sound engineers to create a puppet show set in the Light and Sound Unit, students do use tools (flashlight) and materials (cardboard, clear plastic, tinted plastic, wax paper) to design and/or build a device (puppet show scenery) that solves a specific problem (the current puppet show scenery is too heavy and difficult to move). Students also use materials to design a sound source to produce different sounds for the puppet show. Both activities "use tools and materials to design and build a device that uses light or sound to solve a

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			problem" as required by the DCI (LE.PS4C.a) and PE; however neither requires that the light or sound device be used to communicate over long distances as also required by DCI (LE.PS4C.a). The activity addressing communication over long distances is simply mentioned in Lesson 4.5, Activity 3, Item 10 as a possible "Going Further" activity provided under the Teacher Support tab. As such, teachers may miss this activity or undervalue its importance in fully addressing the DCI.
	REQUIRED **3b)** Science content is **accurate**, reflecting the most current and widely accepted explanations.	**Yes**	The majority of the content is accurate and up-to-date, reflecting the most current and widely accepted explanations. No evidence of incorrect or out of date science explanations could be found.
	3c) In any one grade or course, instructional materials spend minimal time on content outside of the course, grade, or grade-band.	**Yes**	The instructional materials spend minimal time on content outside of the grade-band.
Non-Negotiable (only reviewed if criteria 1 and 2 are met) **4. DISCIPLINARY LITERACY:** Materials have students engage with authentic sources and incorporate speaking, reading, and writing to develop scientific literacy. ☒ Yes ☐ No	**REQUIRED *Indicator for grades 4-12 only** **4a)** Students regularly engage with **authentic sources** that represent the language and style that is used and produced by scientists; e.g., journal excerpts, authentic data, photographs, sections of lab reports, and media releases of current science research. Frequency of engagement with authentic sources should increase in higher grade levels and courses.	**N/A**	
	REQUIRED **4b)** Students regularly engage in **speaking and writing** about scientific phenomena and engineering solutions using authentic science sources; e.g., authentic data, models, lab investigations, or journal excerpts. Materials address the necessity of using **scientific evidence** to support scientific ideas.	**Yes**	Students regularly engage in speaking and writing about scientific phenomena and engineering solutions using authentic science sources. The materials address the necessity of using scientific evidence to support scientific ideas. For example, in the Animal and Plant Defenses Unit, Lesson 1.3, students use the Structure-Function Language Frame to describe the structures tortoises use to survive. The frame "A _____ uses its _____ to _____" is used to help students structure claims such as "A tortoise uses its mouth to bite." This same Language Frame is used again later in Lesson 2.2 to assist students in describing how animals use

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			their structures to get and eat other living things as food. In Lesson 1.4, students use an Explanation Language Frame to explain why different organisms in the Survival Game survived. The frame "The ____ did survive because it ____" is used to help students structure explanations, such as, "The fish did survive because it was not eaten." In Lesson 1.5, students discuss with a partner what sea turtle structures help them do what they need to do to survive. Students then watch three videos of sea turtles to gather evidence to use to support a written explanation describing how Spruce survives because of her structures. In Lesson 3.1, students create a minibook to communicate their ideas about how animal and plant offspring survive. In the Light and Sound Unit, Lesson 1.2, students practice using evidence to support scientific ideas as they make and discuss observations from the Cave and Flashlight video and read the text Can You See in the Dark? Students gather evidence from both sources to conclude that light is needed to see in completely dark places, like a cave. In Lesson 3.6, students use the Explanation Language Frames to explain to a partner how the materials they selected for their stencils created a bright area, a medium bright area, and a dark area on their scene. After this discussion, students generate a written explanation for their Engineer's Report in their investigation notebook on page 22. In Lesson 4.3, students write a minibook in which they identify sound sources and the parts of the sources that vibrate. In the Spinning Earth Unit, Lesson 3.3, students conduct observations at two different times to track the sun's position in the sky. Students use the evidence gathered from the first (morning) observation to predict where the sun will be in the sky for the afternoon observations, and then they use data from both observations as evidence to predict where the sun will be in the evening. Evidence is recorded in students' notebooks and on

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			a sky mural.
	REQUIRED **4c)** There is **variability** in the tasks that students are required to execute. For example, students are asked to produce solutions to problems, models of phenomena, explanations of theory development, and conclusions from investigations.	**Yes**	There is variability in the tasks that students are required to execute throughout the instructional materials. Students are asked to engage in a variety of tasks including producing solutions to problems, using and developing models of phenomena, constructing explanations of theory development, and drawing conclusions from investigations. For example, in the Animal and Plant Defenses Unit, Lesson 1.3, students pantomime to model how humans use their structures to get food, how elephants use their structures to get water, and plants use their structures to get water. In Lessons 2.4, students work with a partner to create a model to explain how animals and plants use shells and armor to defend themselves from predators. In the Light and Sound Unit, Lesson 4.2, students investigate sound at Sound Source Stations to gather evidence to answer questions about sound and vibrations. At each station, students try out the sound source (i.e., plucking a rubber band), and then record observations about what they hear, see, and feel for each source in their notebooks. Students then participate in a culminating discussion where they help the teacher co-construct a chart of their observations. Students revisit questions and wonderings previously posed about sounds and then listen as the teacher reads What Vibrates? to the class. This activity prepares students for the next lesson in which they write their own mini-books about sounds. In the Spinning Earth Unit, Lesson 1.1, students collect data by making observations of the sky. Students record their observations in their investigation notebooks by drawing and labeling what they observe. In Lesson 1.3, Activity 1, students organize this data on a chart to compare and contrast what can be observed in the daytime and nighttime sky. In the next activity, students

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			engage in role playing to demonstrate actions representing what can be observed in the daytime or nighttime sky. In Lesson 2.1, students use data collected about observations of the sky from different places to label locations experiencing daytime and nighttime on a globe using stickers.
	4d) Materials provide a coherent sequence of authentic science sources that build scientific **vocabulary** and knowledge over the course of study. Vocabulary is addressed as needed in the materials but not taught in isolation of deeper scientific learning.	**No**	Vocabulary is presented throughout the unit as needed, but students are often told definitions and do not have the opportunity to create meanings for themselves. Definitions are frontloaded before activities, with students missing the opportunity to develop their meanings as they engage in the work. For example, in the Animal and Plant Defenses Unit, Lesson 1.1, students are introduced to their role as aquarium scientists as they will figure out how plants and animals will "survive." Then students are told, "that means we will be thinking about how animals and plants stay alive." Students do not have to opportunity to develop the definition on their own. In the same lesson, the teacher introduces the term "scientist" and then provides the definition. In the Light and Sound Unit, Lesson 1.3, the vocabulary term "source" is introduced as students begin to investigate the question, "Where does light come from that makes surfaces look bright or dark?" The teacher provides the definition. Lesson 4.2, as students are observing a rubber band that has been plucked, the teacher says, "There is a word to describe the movement of the rubber band - vibrate." The teacher provides the definition and then the class goes through the vocabulary routine of repeating the word and whispering it to a partner as the teacher posts the word on the vocabulary word wall. In the Spinning Earth Unit, students make predictions about what they might observe in the nighttime sky. At this point, the teacher introduces the term "predict" and provides the definition.
SECTION II: ADDITIONAL INDICATORS OF QUALITY			

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
Additional Criterion **5. LEARNING PROGRESSIONS:** The materials adequately address Appendix A: Learning Progressions. They are coherent and provide natural connections to other performance expectations including science and engineering practices, crosscutting concepts, and disciplinary core ideas; the content complements the the Louisiana Student Standards for Math. ☒ Yes ☐ No	**REQUIRED** **5a)** The overall organization of the materials and the development of disciplinary core ideas, science and engineering practices, and crosscutting concepts are coherent within and across units. The **progression of learning** is coordinated over time, clear and organized to prevent student misunderstanding and supports student mastery of the performance expectations.	**Yes**	The lessons within and across each unit are organized to support learning through a natural progression. Students engage with and build an understanding of the three dimensions of the standards at increasing levels of complexity and sophistication and engage in a coherent progression of learning that is coordinated over time, clear, and organized. Each unit is built around a bundle of performance expectations with the phenomena driving the instruction forward throughout the unit. Documents, including the “Progress Build” document, help teachers see the learning progression students go through in their development of ideas and knowledge as related to the central phenomenon. For example, in the Spinning Earth unit, Chapter 1, students investigate why the sky looks different to Sai and his grandmother who live in separate locations. Students begin by making observations of the daytime sky and get secondhand data about the nighttime sky (SEP, Planning and Conducting Investigations), and organize their data to identify the Pattern (CCC) of seeing the sun during the day time and stars during the nighttime (DCI.LE.ESS1A.a). In Chapter 2, students Investigate (SEP) why it is daytime for Sai when it is nighttime for his grandma. Students use videos and images to make observations (SEP, Obtaining Information) about the Earth and use Patterns (CCC) figure out that the Earth is round and it is daytime in places on Earth that are facing the sun, and nighttime in places on Earth not facing the sun (DCI, LE.ESS1A.a). In Chapter 4, students continue to Investigate (SEP) what can be observed in the sky and figure out that the sun makes the same Pattern (CCC) in the sky every day. (DCI.LE.ESS1A.a). In the Light and Sound Unit, students Investigate (SEP) several Cause and Effect (CCC) relationships about light and sound. Students discover that a light

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			source is required for objects to be seen (DCI, LE.PS4B.a). Students deepen their understanding as they continue to explore how light interacts with different materials and find that some materials block light from reaching a surface while others allow all or some light to pass through them (DCI, LE.PS4B.b). Students also learn that when sound is heard it is because the sound source is vibrating (DCI, LE.PS4A.a). This progression of knowledge helps students in the engineering process of designing, building, and projecting a scene for a puppet show (SEP, Developing and Using Models).
	5b) Students apply mathematical thinking when applicable. They are not introduced to math skills that are beyond the applicable grade's expectations in the Louisiana Student Standards for Mathematics. Preferably, **math connections** are made explicit through clear references to the math standards, specifically in teacher materials.	Yes	Students apply mathematical thinking when applicable. Students are not introduced to math skills that are beyond the grade's expectations. There are supplemental math extension activities in the "Going Further: Mathematical Thinking notes" under the "Teacher Support" tab in several lessons. For example, in the Animal and Plant Defenses Unit, Lesson 4.2, Activity 2, Teacher Support Tab, Instructional Suggestion, Going Further: Mathematical Thinking, it is suggested that the class participates in constructing a bar graph representing the aquarium exhibit models, then counting "how many," "how many more," and "how many less" there are in each column on the graph. This address Louisiana Student Standards for Math (LSSM) 1.MD.C.4, in which students organize, represent, and interpret data and ask and answer how many, how many more, and how many less questions.
Additional Criterion **6. SCAFFOLDING AND SUPPORT:** Materials provide teachers with guidance to build their own knowledge and to give all students extensive opportunities and support to explore key concepts using multiple, varied experiences to build scientific thinking.	**REQUIRED** **6a)** There are separate **teacher support** materials including: scientific background knowledge, support in three-dimensional learning, learning progressions, common student misconceptions and suggestions to address them, guidance targeting speaking and writing in the science classroom (i.e. conversation guides, sample scripts, rubrics, exemplar student responses).	Yes	There are separate teacher support materials that include scientific background knowledge, support in three-dimensional learning, learning progressions, and specific tips to enhance the delivery of the lessons. Exemplar student responses are also included. The "Planning for the Unit" section located at the onset of each unit provides multiple supports for teachers. The Unit Overview gives a summary of the unit, the Unit Map outlines the driving question and

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
☒ Yes ☐ No			how it is answered in each chapter, and the Progress Build describes the way in which students' explanations of the central phenomenon should develop and deepen over the course of the unit. This section also includes Materials and Preparation that lists all of the materials provided by kit as well as those that are to be provided by the teacher. Getting Ready to Teach outlines tasks the teacher needs to do to prepare ahead of time (such as printing needed posters and copies, organizing students into groups or partners) and offers suggestions for classroom management during activities and during clean up. The Standards at a Glance section lists Louisiana Student Standards for Science, ELA, and Math. The Teacher Supports tab within each lesson includes topics such as background information, pedagogical goals, and instructional suggestions that may include ideas for management, providing more support, extensions, or how to address specific misconceptions. For example, in the Animal and Plant Defenses unit, Lesson 3.5, students observe videos and read about young offspring and discuss how the offspring signal their parents for help and how the parents respond to those signals. The Teacher Support tabs include background information for the teacher about parent/offspring interactions, including information about the bodily structures of both offspring and parents to give off and respond to signals. The lesson calls for students to visualize and share their idea of offspring signals. One instructional suggestion is to extend the discussion by allowing students to share what they visualize with a partner first, and then listen as partners share. Then, students share how their ideas are alike and different, providing them added language support through opportunities to practice articulating their descriptions in detail before sharing with the class. There is also an instructional suggestion that outlines the benefits of reading informational text

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			with partners or chorally, differentiating according to the needs of the class. In the Spinning Earth unit, Lesson 2.1, students discover that the sky can look different at the same time in different locations. Teacher Supports for this lesson include Background information for the teacher about the Crosscutting Concept of Systems and System Models and how the lessons in the unit relate and build with this CCC. Background information also explains how students can connect to firsthand inquiry experiences and secondhand text-based experiences. Also included is the rationale for students working with globes in pairs rather than in a whole class activity, and an Assessment section that includes guidance on how to differentiate in response to the students' understanding based on the Critical Juncture Assessment at the end of the previous chapter. Student exemplars are embedded within the unit materials to assist teachers in formatively assessing student understanding. For example, in the Animal and Plant Defenses Unit, Lesson 1.2, student exemplar or "look for" responses are provided after teacher questions to help teachers check for understanding. A "say" icon indicates a teacher question, "What is different about how you and a tortoise do what you need to do to survive?" Student exemplar responses are indicated with [ ] [e.g., The tortoise used its long neck and beaky mouth to get its food. We used our hands to get our food. We used our sharp teeth to chew the carrot].
	6b) Appropriate suggestions and materials are provided for **differentiated instruction** supporting varying student needs at the unit and lesson level (e.g., alternative teaching approaches, pacing, instructional delivery options, suggestions for addressing common student difficulties to meet standards, etc.).	**Yes**	Appropriate suggestions and materials are provided for differentiated instruction to support varying student needs at the unit and lesson level. Each lesson includes a section titled Differentiated Instruction. Suggestions are given for students struggling, English Learners, and those who need extension. There are specific suggestions for each lesson under

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			the tab labeled Teacher Support within the online Instructional Guide that contain instructional suggestions, including time management, extensions, and clarification of misconceptions. For example, in the Light and Sound Unit, Lesson 3.1, differentiation strategies are provided to address potential problems within the lesson. For example, students must be able to manage and record observations for several materials. To support students who may have difficulty with complex recording, the materials suggest that students be allowed ample time to conduct investigations before recording observations. It is suggested that the investigation notebooks be distributed after students have had time to make observations. They can record their observations or retest and record as needed. In the Animal and Plant Defenses Unit, Lesson 1.1, the teacher is warned that the lesson is discussion-centered which could potentially be a challenge for some students. There are specific differentiation strategies for English learners, including alternate means of expressing ideas and advice for strategic partnering. There are also specific strategies to support students with disabilities, specifically accommodations or modifications for students with Individualized Educational Plans (IEP) or 504 Plans, such as strategic partnering and building background knowledge by bringing in realia and images of various ocean animals and plants. Additionally, there are extension ideas to differentiate for students who need more challenge. In the Spinning Earth Unit, Lesson 4.3, specific differentiation strategies are provided for English Learners. Suggestions include offering more opportunities to practice with the Explanation Language Frame before sharing out with partners. It suggests that the teacher talk through the Sky Mural with students using the frame "In the _______ , we will see the sun _______ in the sky because Earth

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			________ ." For students who need more of a challenge, suggestions are provided for these students to read a section in the "Patterns of Earth and Space" and discuss with a partner what they think the images on the pages suggest about the planets, with the intention of students applying the idea of planetary spin to new planets.
Additional Criterion **7. USABILITY:** Materials are easily accessible, promote safety in the science classroom, and are viable for implementation given the length of a school year. ☒ Yes ☐ No	**REQUIRED** **7a)** Text sets (when applicable), laboratory, and other scientific materials are **readily accessible** through vendor packaging.	**Yes**	Text sets, laboratory, and other scientific materials are readily accessible through vendor packaging. Students have access to student apps and text through the digital platform. Each unit contains an Investigation Notebook which contains needed materials for the unit. Each unit incorporates reference books that are incorporated into the lesson. These books are accessible as eBooks. Packaged kits are also available for purchase. All needed supplies for each lesson are listed at the beginning of each unit in the Planning for the Unit section under the heading Materials and Preparation. For Example, in the Light and Sound Unit, student text such as Let's Test, Engineering with Light and Sound, Can You See in the Dark? What Vibrates? What Made this Shadow? and Light and Sound: Puppet-Theater Engineers Investigation Notebook are available in vendor packaging or for display through vendor links. Additional resources are provided at the lesson level as lesson projections such as: Projections: Lesson 1.3 and Light Sources and Sound Sources Chart. These lesson projections are available for digital display or in PDF form for printing in support of the objectives for Lesson 1.3. Lab materials are also available. A list of provided and unprovided materials can be found at the beginning of each unit. For example, in the Light and Sound Unit, a list of kit materials is provided for the unit to be taught in full twice to 36 students. The list

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			is provided in an easy to read table which includes the number of items needed and the lesson the material are needed for. In the Animal and Plant Defenses Unit, Lesson 2.3, students first read about animal defenses in the book, Spikes, Spines, and Shells. They use their choice of paper cups, plastic tokens, toothpicks, pencil top erasers, and tissue paper to design and construct a defense for a ball of modeling clay, all of which is also provided in the kit. The teacher has to provide chart paper, markers, and masking tape for recording ideas for construction. In the Spinning Earth Unit, Lessons 2.1 and 2.2, students use inflatable globes and sun and stars cards to model the phenomenon of day and night in different parts of the world. Stickers are used to pinpoint different cities on the globe, so that comparisons can be made concerning the different views of the sky at different locations at any given point in time. The globes, sun and star cards, and the various colored stickers are all provided in the materials. Also included are the online videos and the big book, After Sunset, needed for the lessons.
	7b) Materials help students build an understanding of standard operating procedures in a science laboratory and include **safety** guidelines, procedures, and equipment. Science classroom and laboratory safety guidelines are embedded in the curriculum.	**Yes**	Materials help students build an understanding of standard operating procedures in a science laboratory and include safety guidelines, procedures, and equipment. Science classroom and laboratory safety guidelines are embedded in the curriculum. For example, within the Investigation Notebook for each unit, safety guidelines are addressed on page 1. Safety notes such as "Don't taste things," "Smell things like a Chemist," and "Protect your eyes" are given. Additional safety notes are located within the lessons. In the Light and Sound Unit, Lesson 1.3, materials suggest that teachers review each safety guidelines with students. As students prepare to go on a Light-Source Hunt in this lesson, the teacher cautions students not to look directly at light sources.

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			Safety warnings are called out in specific lessons as needed. For example, in the Animal and Plant Defenses Unit, Lesson 2.3, students use materials to model animal defenses. A Safety Note is provided at the top of the lesson in the step-by-step teacher instructions to prompt teachers to caution students about how to use toothpicks safely, namely not poking themselves or others and not breaking toothpicks which could result in splintering. In the Spinning Earth Unit, Lessons 1.1, 1.2, and 3.1, students go outside to observe the sky. A Safety Note is provided at the top of each lesson in the step-by-step teacher instructions to remind teachers to caution students to never look directly at the sun. These safety warnings are also found in the Materials and Preparation section of the Lesson Brief.
	7c) The total amount of content is **viable** for a school year.	**Yes**	The total amount of content is viable for a school year. The materials contain 3 units of study. There are 22 lessons in each unit which are approximately 45 minutes in length. The materials provide suggested time allotments for each stage of each lesson to assist teachers with planning and time management, making the content viable for a school year.
Additional Criterion **8. ASSESSMENT:** Materials offer assessment opportunities that genuinely measure progress and elicit direct, observable evidence of the degree to which students can independently demonstrate the assessed standards. ☒ Yes ☐ No	**REQUIRED** **8a) Multiple types** of formative and summative assessments (performance-based tasks, questions, research, investigations, and projects) are embedded into content materials and assess the learning targets.	**Yes**	Multiple types of formative and summative assessments are embedded into content materials and assess the learning targets. Formative assessments, such as pre-unit assessments, on the fly assessments, self-assessments, and critical juncture writing assessments are included in each unit. End of Unit Assessments and rubrics are also provided. The materials provide an “Assessment System” document at the beginning of each unit which notes the lesson, the assessment opportunities, the science standards involved in the task organized by the three dimensions, and evaluation guidance. In

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			addition, the unit's "Progress Build" section "describes the way students' understanding of the unit content should develop and deepen through engagement with the unit's learning experiences." Assessment focuses are also provided on the "At a Glance" tables for the "Critical Juncture" Assessments and "On-the-Fly" Assessments for each unit. For example, in the Animal and Plant Defenses Unit, Lesson 1.1, students engage in a think and talk routine with a partner to answer a series of questions about a porcupine's ability to survive in a forest. After partner talk, students share their ideas with the class and the teacher records their responses. Guidance from the Assessment Guide: Interpreting Students' Pre-Unit Explanations document, suggests that teachers use student responses to gauge their baseline understanding of how animals protect themselves from predators, their proficiency with the Crosscutting Concept Structure and Function, and to identify preconceptions that will need addressing during the unit. On-the-Fly Assessments are also embedded throughout the Unit. For example, in Lesson 2.4, students work with partners to construct a model to explain how animals and plants use shells and armor to defend themselves. Teachers use this performance-based task as an On-the-Fly Assessment to assess student understanding of DCI LE.LS1A.a. Formative Critical Juncture Assessments are also embedded within the unit. In Lesson 3.3, students use a Language Frame and Writing Planner to construct an explanation for how parents and offspring defend themselves. This written assessment evaluates student understanding of DCI LE.LS1B.a. On-the-Fly assessments are also embedded throughout the Spinning Earth Unit. In Lesson 1.3, students classify and interpret data by sorting daytime and nighttime objects. In Lesson 1.4, students construct a table with data from webcam

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			observations. In Lesson 2.2, students make predictions about daytime or nighttime in different locations based on patterns of evidence. In Lesson 2.3, students complete the 3-D task of diagramming daytime and nighttime on Earth in their investigation notebook. In Lesson 3.1, students begin observations of the position of the sun in the sky. They are evaluated on how they decide to develop objective, repeatable measurement methods for recording their observations. In Lessons 4.3, students use an Explanation Language Frame and their observations to predict the sun's location in the evening sky on different days. Each of these On-the-Fly assessments measure students growing understanding of DCI LE.ESS1A.a. In a Critical Juncture Assessment in Lesson 4.4, students explain the sun's repeating pattern in written and illustrated form. A Self-Assessment in Lesson 5.2, asks students to tell their partner about at least one idea they have learned that they didn't know before. This question-based assessment helps students evaluate their understanding of DCIs LE.ESS1A.a and LE.PS4B.a before engaging in the unit's summative assessment, a one-on-one conversation where each student explains concepts learned throughout the unit. The summative assessments have minimal questions that do not assess all learning targets taught within the units.
	REQUIRED **8b)** Assessment items and tasks are structured on integration of the **three-dimensions**.	**Yes**	Assessment items and tasks are structured on integration of the three-dimensions. For example, in the Animal and Plant Defenses Unit, Lesson 1.3, students are assessed On-the-Fly as they discuss animal structures with partners and identify the functions of the various structures (DCI-LE.LS1A.a, CCC, Structure & Function) based on their evidence found in the reference book, Spikes, Spines, and Shells (SEP, Engage in Argument from Evidence). In Lesson 3.2, after students read and watch videos to observe Patterns (CCC) of

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			parent/offspring interactions, they are informally evaluated as they visualize and role-play (SEP, Develop and Use Models) interactions between parents and offspring of different species that help the offspring survive (DCI-LE.LS1B.a). In the Light and Sound unit, Lesson 2.3, students Plan and Carry Out an Investigation (SEP) to test different materials to see if they block light (DC ILE.PS4B.b). As the teacher circulates and monitors student progress, students are asked to provide evidence to support a claim (SEP, Engage in Argument from Evidence) as to whether or not the material being tested blocks light (CCC, Cause and Effect). In the Spinning Earth Unit, Lesson 3.6, students use a globe to Model (SEP) and a language frame to assist them in constructing an explanation for what Causes (CCC) day to change to night (DCI LE.ESS1A.a) as a Critical Juncture Assessment.
	8c) Scoring guidelines and rubrics **align** to performance expectations, and incorporate criteria that are specific, observable, and measurable.	**Yes**	Scoring guidelines and rubrics align to performance expectations, and incorporate criteria that are specific, observable, and measurable. Student Look Fors and Possible Student Responses are given to guide teachers in assessment of student understanding. Embedded On-the-Fly Assessments have Look For/Now What? guides for teachers. The Look For section gives specific criteria or behaviors for the teacher to look for to informally assess student understanding of a concept or task. The Now What? section includes suggestions for what to do based on what was observed. Embedded Critical Juncture Assessments are similar in that they have Assess Understanding that gives the specific criteria and behaviors to observe, and Tailor Instruction, that gives suggestions for how the teacher should proceed based on what was observed. Rubric are also provided for possible summative assessment opportunities.

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			For example, in the Animal and Plant Defenses Unit, Lesson 1.4, a Clipboard Assessment Tool is provided to assess student's responses to an investigation notebook prompt asking them to illustrate and describe what a chosen animal needs to do to survive. The tool provides teachers with guidance in what to look for in student responses, such as responses "should include 'not being eaten' among the things their animals needs to survive." This formative assessment is specific, observable, and qualitatively measurable, and aligned to support PE 1-LS1-1. In the Light and Sound Unit, Lesson 4.1, students participate in a hands-on investigation in which they move through a station rotation and evaluate provided materials to determine if they are a sound source. As students rotate, they record data in their investigation notebook. Exemplar responses are provided under the Possible Response tab, and an Assessment Guide featuring four different rubrics is available under Digital Tools. Rubric 1 assess students' understanding of the SEP, Plan and Carry Out an Investigation. The rubric provides specific evaluation points such as "Students specify the data that will be collected, and the data indicated could serve as evidence to answer the question" and a numeric evaluation scale of 0-2. Rubric 2 evaluates student performance of the SEP Analyze and Interpret Data. Rubric 3 evaluates student understanding of scientific content, and Rubric 4 evaluates student understanding of the CCC Cause and Effect. Rubrics 2 -4 also contain specific criteria for evaluation, together with example answers, and a 0-1 point numeric evaluation scale. This assessment is aligned to support PE 1PS4-1. Due to the lack of reading and writing proficiency of first graders, most of the assessments, even summative, are talk-based. For example, Light and Sound, Lesson 4.6, the End of Unit Assessment is a one-on-one conversation with each student about

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			light. While these conversations are necessary to evaluate each student's understanding, having a one-on-one conversation (involving up to 10 follow-up questions and prompts) with each child in the class may prove to be time-prohibitive. Suggestions for handling this problem when using formative assessments are made in each unit's Planning for the Unit, Assessment System, Assessment Support and under the Teacher Support tab of some lessons. For example, in the Spinning Earth unit, Lesson 1.4, Teacher Support, Instructional Suggestion suggests choosing a cross section of the class to assess in order to make a Critical Juncture decision about whether to include additional instruction, OR assessing higher level students earlier in the chapter and lower ones later, OR just assess lower achieving students assuming that if their learning is well-supported, the needs of other students will also be met.

FINAL EVALUATION
Tier 1 ratings receive a "Yes" in Column 1 for Criteria 1 – 8.
Tier 2 ratings receive a "Yes" in Column 1 for all non-negotiable criteria, but at least one "No" in Column 1 for the remaining criteria.
Tier 3 ratings receive a "No" in Column 1 for at least one of the non-negotiable criteria.

Compile the results for Sections I and II to make a final decision for the material under review.

Section	Criteria	Yes/No	Final Justification/Comments
I: Non-Negotiables	1. Three-dimensional Learning	**Yes**	Materials are designed so that students develop scientific content knowledge and scientific skills through interacting with the three dimensions of the science standards. The majority of materials integrate the science and engineering practices, crosscutting concepts, and disciplinary core ideas to support deeper learning.
	2. Phenomenon-Based Instruction	**Yes**	Observing and explaining phenomena and designing solutions provides the purpose and opportunity for students to engage in learning a majority of the time. There is opportunity for improvement in the approach to phenomena throughout the materials.
	3. Alignment & Accuracy	**Yes**	The majority, 7 out of 9 or 78%, of the Louisiana Student Standards for Science are incorporated to the full Depth. Two standards, 1-PS4-1 and 1-PS4-4,

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			are not sufficiently addressed. Minimal time is spent on content outside of the grade band.
	4. Disciplinary Literacy	**Yes**	Students participate in a variety of tasks that help them develop a deeper understanding of science content. Students develop models, complete investigative tasks, and regularly speak and write as they draw conclusions and make claims supported by scientific evidence. Vocabulary is presented throughout the unit as needed, but students are often told definitions and do not have the opportunity to create meanings for themselves.
II: Additional Indicators of Quality	5. Learning Progressions	**Yes**	The overall organization of the materials supports student mastery of the standards. The progression of learning for the Disciplinary Core Ideas are coherent and organized to ensure student mastery.
	6. Scaffolding and Support	**Yes**	There are separate teacher support materials and appropriate suggestions for multiple types of learners within the materials.
	7. Usability	**Yes**	Text sets, laboratory, and other scientific materials are readily accessible through vendor packaging. Safety notes and guidelines are embedded within the curriculum and a viable amount of material is provided to be completed within the school year.
	8. Assessment	**Yes**	Formative and summative assessments that assess the learning targets are included within the curriculum. Assessment tasks are structured on integration of the three-dimensions and scoring guidelines align to performance expectations.
FINAL DECISION FOR THIS MATERIAL: **Tier I, Exemplifies quality**			

Strong science instruction requires that students:

- Apply content knowledge to explain real world phenomena and to design solutions,
- Investigate, evaluate, and reason scientifically, and
- Connect ideas across disciplines.

Title: **Amplify Science Louisiana** Grade/Course: **2**

Publisher: **Amplify Education, Inc.** Copyright: **2019**

Overall Rating: **Tier I, Exemplifies quality**

Tier I, Tier II, Tier III Elements of this review:

STRONG	WEAK
1. Three-dimensional Learning (Non-Negotiable)	
2. Phenomenon-Based Instruction (Non-Negotiable)	
3. Alignment Accuracy (Non-Negotiable)	
4. Disciplinary Literacy (Non-Negotiable)	
5. Learning Progressions	
6. Scaffolding and Support	
7. Usability	
8. Assessment	

To evaluate each set of submitted materials for alignment with the standards, begin by reviewing the indicators listed in Column 2 for the non-negotiable criteria. If there is a "Yes" for all required indicators in Column 2, then the materials receive a "Yes" in Column 1. If there is a "No" for any required indicator in Column 2, then the materials receive a "No" in Column 1. Submissions must meet Criteria 1 and 2 for the review to continue to Criteria 3 and 4. Submissions must meet all of the non-negotiable criteria in order for the review to continue to Section II.

For Section II, begin by reviewing the required indicators in Column 2 for each criterion. If there is a "Yes" for all required indicators in Column 2, then the materials receive a "Yes" in Column 1. If there is a "No" for any required indicators in Column 2, then the materials receive a "No" in Column 1.

Tier 1 ratings receive a "Yes" in Column 1 for Criteria 1 – 8.
Tier 2 ratings receive a "Yes" in Column 1 for all non-negotiable criteria, but at least one "No" in Column 1 for the remaining criteria.
Tier 3 ratings receive a "No" in Column 1 for at least one of the non-negotiable criteria.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
SECTION I: NON-NEGOTIABLE CRITERIA: Submissions must meet Criteria 1 and 2 for the review to continue to Criteria 3 and 4. Submissions must meet all of the non-negotiable criteria in order for the review to continue to Section II.			
Non-Negotiable **1. THREE-DIMENSIONAL LEARNING:** Students have multiple opportunities throughout each unit to develop an understanding and demonstrate application of the three dimensions. ☒ Yes ☐ No	**REQUIRED** **1a)** Materials are designed so that students develop scientific content knowledge and scientific skills through interacting with the three dimensions of the science standards. The majority of the materials teach the science and engineering practices (SEP), crosscutting concepts (CCC) and disciplinary core ideas (DCI) separately when necessary but they are most often integrated to support deeper learning.	**Yes**	Materials are designed so that students develop specific content knowledge and scientific skills through interacting with the three dimensions of the science standards. The majority of materials integrate the Science and Engineering Practices (SEP), Crosscutting Concepts (CCC), and Disciplinary Core Ideas (DCI) to support deeper learning. In the Plant and Animal Relationships Unit, Lesson 1.6, students participate in a discussion to determine how they could use their planted radish seeds to investigate whether seeds need sunlight to grow into plants (SEP, Planning and Carrying Out Investigations). Students further observe that seeds will not sprout if they do not receive water and that although seeds will sprout if they do not receive sunlight, they will not grow very tall (DCI LE.LS2A.a). Finally, students identify and compare Patterns (CCC) between seeds that receive water and seeds that do not receive water (the seeds that received water grew; those that did not did not grow) and identify what Caused (CCC) some sprouts to be smaller than others (placed in the dark). In the Properties of Materials Unit, Chapter 2, students Analyze and Interpret Data (SEP) to determine if heated or non-heated mixtures of cornstarch and water have properties better suited for making glue (DCI-LE.PS1A.a). The tests involve students using Cause and Effect (CCC) to determine materials' strength. In the Changing Landforms Unit, Lesson 4.1, students consider what they have learned from previous lessons about the slow erosion of a cliff and investigate what caused a nearby cliff to erode quickly (DCI LE.ESS1C.a, CCC Cause and Effect).

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			Following a discussion about how landforms erode quickly, students are tasked to create diagrams (SEP, Developing and Using Models) to show how they think the cliff eroded overnight (CCC, Cause and Effect). Students use a reference book, *Handbook of Land and Water*, to Obtain, Evaluate, and Communicate Information (SEP) about how landforms erode quickly.
Non-Negotiable **2. PHENOMENON-BASED INSTRUCTION:** Explaining phenomenon and designing solutions drive student learning. ☒ Yes ☐ No	**REQUIRED** **2a)** Observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning a majority of the time.	**Yes**	Observing and explaining phenomena and designing solutions provides the purpose and opportunity for students to engage in learning a majority of the time. For example, in the Plant and Animal Relationships Unit, students are challenged to investigate why there are no new Chalta trees growing in the fictional Bengal Tiger Reserve. This serves as the anchor phenomenon for the unit and provides purpose and opportunity for students to engage in the lessons that follow. In Chapter 1, students read about how scientists study habitats, observe their own sample study site, analyze maps of the reserve, and investigate seeds to discover that there are no new Chalta trees in the reserve because the seeds must not be getting enough water and sunlight. In Chapter 2, students investigate roots and leaves to understand plant systems with different structures and utilize a simulation model to discover that plants need plenty of space for water absorption and sunlight. By the end of the Chapter, students realize that the Chalta seeds are not getting to places where they get proper sunlight and water in order to grow. In Chapter 3 and 4, students build on key understandings they have developed thus far and investigate seed dispersal related to the anchor phenomenon. This investigation leads students to the discovery that the Chalta trees rely on elephants to disperse their seeds and that seeds from other plants get to places they can grow through wind dispersal. By the end of the unit, students construct scientific explanations about why the Chalta seeds are not getting to places where they can grow into

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			new plants and how other seeds in the reserve are dispersed, connecting back to the anchor phenomenon. In the Properties of Materials Unit, students are tasked to design a better glue for their school. This serves as the anchor phenomenon for the unit and provides purpose and opportunity for students to engage in the lessons that follow. As students work through the unit, they engage in learning experiences to answer the questions, "How can you make a sticky glue? Can heating an ingredient make a better glue? What ingredients can be used to make a glue that is sticky and strong? What is the glue recipe that best meets our design goal?" In doing so, the students provide a solution to the glue problem presented as the anchor phenomenon at the start of the unit. In the process, students develop an understanding of the properties of materials, heating and cooling substances, mixtures, and how to use these ideas to determine which materials have the best properties that are best suited for the intended purpose. There is opportunity for improvement in the approach to phenomena throughout the materials. Materials often call for the teacher to visibly post a unit question prior to students' exposure to a phenomenon, and often, unit and chapter questions or problems are identified for students without explicit embedded opportunity for them to first generate these (or similar) questions and problems on their own.
Non-Negotiable (only reviewed if criteria 1 and 2 are met) **3. ALIGNMENT & ACCURACY:** Materials adequately address the Louisiana Student Standards for Science.	**REQUIRED** **3a)** The majority of the Louisiana Student Standards for Science are incorporated, to the full **depth of the standards**.	**Yes**	The majority, 10 out of 11 or 91%, of the Louisiana Student Standards for Science are incorporated to the full depth of the standards. Standard 2-PS1-3 is not incorporated to the full depth of the standard. The performance expectation for 2-PS1-3 requires that students make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
☒ Yes ☐ No			into a new object. According to the Unit Overview, this standard is addressed in the Properties of Materials Unit. While students construct multiple evidence-based accounts within the unit, and while some include small pieces, such as glue ingredients, and large objects, such as glue, these arguments are not intended to prove that the small pieces which make up objects can be "disassembled" and made into new objects. For example, in Lesson 1.8, students construct an evidence-based account stating which glue ingredients produce the stickiest glue. While students do make observations and construct an argument which includes how an object (glue) is formed from small pieces (ingredients), this argument doesn't focus on objects being made from small pieces, but rather how different ingredients result in different glue properties. Additionally, the argument doesn't include how ingredients can be "disassembled" and made into a new object. In Lesson 2.1, students read the book *Can You Change It Back?* Students read the book with the intention of discovering what substances can be changed back and which cannot after heating and cooling processes. After students make predictions and read about several substances that go through these changes, the students are introduced to "A Different Kind of Change: Rearranging," on pages 22-23. Although these two pages are discussed after they read, students do not fully engage with this standard. To reach the full depth of the standard, students should develop the understanding that different properties are suited for different purposes (LE.PS1A.a) and that a great variety of objects can be built up from a small set of pieces (LE.PS1A.b). In an extension activity, "Going Further," found under the Teacher Support tab, students are able to engage more with the standard; however, the activity is not required.
	REQUIRED **3b)** Science content is **accurate**, reflecting the most current and widely accepted explanations.	**Yes**	The majority of the content is accurate and up-to-date, reflecting the most current and widely accepted explanations. No evidence of incorrect or out of date science explanations could be found.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
	3c) In any one grade or course, instructional materials spend minimal time on content outside of the course, grade, or grade-band.	**Yes**	The instructional materials spend minimal time on content outside of the grade-band.
Non-Negotiable (only reviewed if criteria 1 and 2 are met) **4. DISCIPLINARY LITERACY:** Materials have students engage with authentic sources and incorporate speaking, reading, and writing to develop scientific literacy. ☒ Yes ☐ No	**REQUIRED *Indicator for grades 4-12 only** **4a)** Students regularly engage with **authentic sources** that represent the language and style that is used and produced by scientists; e.g., journal excerpts, authentic data, photographs, sections of lab reports, and media releases of current science research. Frequency of engagement with authentic sources should increase in higher grade levels and courses.	**N/A**	
	REQUIRED **4b)** Students regularly engage in **speaking and writing** about scientific phenomena and engineering solutions using authentic science sources; e.g., authentic data, models, lab investigations, or journal excerpts. Materials address the necessity of using **scientific evidence** to support scientific ideas.	**Yes**	Students regularly engage in speaking and writing about scientific phenomena and engineering solutions using authentic science sources. The materials address the necessity of using scientific evidence to support scientific ideas. For example, in Properties of Materials Unit, Lesson 1.4, the idea of stating a claim and supporting it with evidence is introduced in a teacher-led discussion about the materials of pencils and paper clips. Students are then asked to make a claim stating whether two glues they have been investigating are the same substance and support that claim with evidence gathered during their investigation. In the Plant and Animal Relationships Unit, Lesson 1.7, students discuss in pairs, groups, and whole class, how science words are related. For example, the words "seeds" and "water" are related because seeds need water to grow. After the discussion, students use concept map words to explain where plants come from and what seeds need to grow into adult plants. Later, in Lesson 2.3, students use evidence gained from a model to generate a written explanation of why plant leaves might not receive enough sunlight to grow. In the Changing Landforms Unit, Lesson 1.5,

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			students are asked to discuss and then record observations about their sand samples in their Investigation Notebooks similar to how geologist Gary Griggs did in the book, Gary's Sand Journal. The notebook page has columns for students to organize their thoughts into observations of the sand and the inferred cause of the characteristics of that particular sand sample. Open-ended questions follow, allowing students to express their ideas inferencing how the mystery sand changed over time even though they were not witness to the events. Students then regroup to discuss their sand samples, using their notes for the discussion.
	REQUIRED **4c)** There is **variability** in the tasks that students are required to execute. For example, students are asked to produce solutions to problems, models of phenomena, explanations of theory development, and conclusions from investigations.	**Yes**	There is variability in the tasks that students are required to execute throughout the instructional materials. Students are asked to engage in a variety of tasks including making observations, making claims, drawing conclusions from investigations, and creating models of phenomena. In the Plant and Animal Relations Unit, Lesson 3.2, students role play the behaviors of a Flitterbird and a Strongbill as they eat the fruits of the Sweetpink Tree and the Yummyberry Bush to model the phenomena of seed dispersal within a habitat. In the Properties of Materials Unit, Lesson 1.5, students investigate the properties of different ingredients to determine if the properties are useful for making a stickier glue for the school. Students conduct a sticky test and record observations to use as evidence to support a claim for the stickiest ingredient. In Lesson 1.9, students use evidence gathered from observations and previous tests to design a glue recipe for the stickiest glue, thus solving a problem. In the Changing Landforms Unit, Lessons 1.1 and 1.2, students read and observe photos to become familiar with different landforms in Lesson. In Lesson 1.3, they investigate different types of sand, recognizing that the shape and size of the individual grains of sand follow patterns that can be used as

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			evidence to explain how quickly or slowly land can change. They synthesize that information in order to identify (and record evidence for) the origin of a mystery sample of sand in Lesson 1.5.
	4d) Materials provide a coherent sequence of authentic science sources that build scientific **vocabulary** and knowledge over the course of study. Vocabulary is addressed as needed in the materials but not taught in isolation of deeper scientific learning.	**No**	Vocabulary is presented throughout the unit as needed, but students are often told definitions and do not have the opportunity to create meanings for themselves. Definitions are frontloaded before activities, with students missing the opportunity to develop their meanings as they engage in the work. For example, in the Plants and Animal Relationships Unit, Lesson 1.1, while discussing the Bengal Tiger Reserve phenomenon, the teacher introduced the word "investigate" and then explains the definition. The word is then added to the vocabulary wall. This is also seen in Lesson 2.1 with the term "evidence." Throughout the Investigation Notebook in the Properties of Materials and Changing Landforms Units, students are guided through a Multiple Meaning Words activity in which students are introduced to words that have different meanings. The meanings or definitions of each word are provided to the students in a table. The students then determine which meaning the word has in the sentence provided. For example, In the Properties of Materials Unit, Lesson 1.7, students complete the Multiple Meanings activity differentiating between multiple meanings of the words "test," "add," and "coat." This is also evidenced in the Changing Landforms Unit, Lesson 2.3, as students complete the activity differentiating between multiple meanings of the words "power," "stable," "wave," and "fall."
SECTION II: ADDITIONAL INDICATORS OF QUALITY			
Additional Criterion **5. LEARNING PROGRESSIONS:** The materials adequately address Appendix A: Learning Progressions.	**REQUIRED** **5a)** The overall organization of the materials and the development of disciplinary core ideas, science and engineering practices, and crosscutting concepts are	**Yes**	The lessons within and across each unit are organized to support learning through a natural progression. Students engage with and build an understanding of the three dimensions of the standards at increasing levels of complexity and sophistication and engage in a coherent progression

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
They are coherent and provide natural connections to other performance expectations including science and engineering practices, crosscutting concepts, and disciplinary core ideas; the content complements the the Louisiana Student Standards for Math. ☒ Yes ☐ No	coherent within and across units. The **progression of learning** is coordinated over time, clear and organized to prevent student misunderstanding and supports student mastery of the performance expectations.		of learning that is coordinated over time, clear, and organized. For example, in the Plant and Animal Relationships Unit, students are confronted with the phenomena that Chalta trees are no longer reproducing in an area where other trees are reproducing within a fictitious Bengal Tiger Reserve. Students start by investigating the needs of plants (SEP, Carrying out an Investigation). Once they find that plants need enough water and sunlight to grow, (LE.LS2A.a) they begin to investigate what causes certain plants to grow in certain areas (CCC, Cause & Effect). In turn, that leads them to wonder how seeds travel from place to place (CCC, Cause & Effect). Students model elephants eating Chalta fruit which contain seeds and then leaving droppings that contain those same seeds elsewhere in the reserve, (SEP, Developing and Using Models) concluding that plants may depend on animals to move their seeds around (DCI LE.LS2A.b). Now knowing that the partitioning of the Reserve has eliminated elephants in that area, students wonder how other trees are continuing to reproduce in that area. This leads to the investigation of seeds of other trees in the Reserve and how they move around (SEP, Carrying out an Investigation). Students make observations and notice that the fluffy seeds and those seeds with propeller-like parts travel well with the wind (CCC, Structure and Function) concluding that they are dispersed without the help of the elephants. In the Properties of Materials Unit, students become glue engineers tasked with designing a stickier glue for their school. This serves as the anchor phenomenon of the unit and drives student learning and opportunity throughout the rest of the unit. The unit begins with students read about different materials and their properties in the book What If Rain Boots Were Made of Rubber? (SEP, Obtaining Information). Students learn that different materials have different properties that can be observed with their senses. Students develop the understanding

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			that, based on these properties, certain materials are better suited to meet certain needs, such as rubber is better suited for rain boots than paper and certain glue ingredients are better suited for making a sticky glue (DCI, LE.PS1A.a). As the unit progresses, students make their own glue (SEP, Planning and Carrying out Investigations) and discover that mixtures result from combining different substances and mixtures may have different properties than their individual ingredients. For example, students learn that a cornstarch and water mixture may be stickier than dry cornstarch and water are separately. Next students Investigate (SEP) how changes (CCC, Cause and Effect) in temperature affect materials and discover than in some cases the properties of materials are permanently changed creating a new substances with new properties, such as when cornstarch and water are heated they become stickier than they were before (DCI, LE.PS1B.a). Each chapter in the unit builds on learning from the previous chapter until students are able to apply their understanding to create the stickiest glue for their school.
	5b) Students apply mathematical thinking when applicable. They are not introduced to math skills that are beyond the applicable grade's expectations in the Louisiana Student Standards for Mathematics. Preferably, **math connections** are made explicit through clear references to the math standards, specifically in teacher materials.	**Yes**	Students apply mathematical thinking when applicable. Many opportunities for students to engage in Mathematics standards are available within the lessons. In addition, teachers can find supplemental math extension activities in the "Going Further: Mathematical Thinking notes" under the "Teacher Support" tab in several lessons. For example in Plant and Animal Relationships Unit, Lesson 2.1, students use rulers to measure the length of the longest plant roots and leaves. This addresses Louisiana Student Standards for Math (LSSM), 2.MD.A.1, measure lengths in standard units, and LSSM 2.MD.D9, generate measurement data by measuring lengths of several objects. Later in Lesson 4.3, students investigate seed dispersal by using a model to determine how far seeds with fluffy parts and seeds without fluffy parts move in the wind. They use tape measures to measure the

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			distance the seed travels (LSSM 2.MD.A.1, 2.NBT.A.2). A possible mathematical extension is given as an Instructional Suggestion under the Teacher Support tab of the Instructional Guide. The suggestion is to have students make bar graphs for the previous propeller seed investigation, as well as the current fluffy seed investigation. According to the suggestion, "The purpose of this activity is to have students analyze data using bar graphs while they practice subtraction skills in order to compare measurements" (LSSM 2.MD.D.10, 2.NBT.B.5). In the Properties of Materials Unit, Lesson 3.5, students use what they have already learned in previous investigations to write a new glue recipe. Students decide how much of one ingredient to use to make the strongest glue that they can. In a table, students record the ingredients they plan to mix together to make their glue. Students add or subtract spoonfuls of ingredients in subsequent trials. This supports LSSM 2.OA.A.1, represent and solve problems involving addition and subtraction. In the Changing Landforms Unit, Lesson 4.2, students compare previous investigations using a chalk model to show erosion to a new model of erosion using sand. This activity supports LSSM 2.MD.A.3, estimate lengths using units of inches, feet, centimeters, and meters.
Additional Criterion **6. SCAFFOLDING AND SUPPORT:** Materials provide teachers with guidance to build their own knowledge and to give all students extensive opportunities and support to explore key concepts using multiple, varied experiences to build scientific thinking.	**REQUIRED** **6a)** There are separate **teacher support** materials including: scientific background knowledge, support in three-dimensional learning, learning progressions, common student misconceptions and suggestions to address them, guidance targeting speaking and writing in the science classroom (i.e. conversation guides, sample scripts, rubrics, exemplar student responses).	**Yes**	There are separate teacher support materials that include scientific background knowledge, support in three-dimensional learning, learning progressions, and specific tips to enhance the delivery of the lessons. Exemplar student responses are also included. The "Planning for the Unit" section located at the onset of each unit provides multiple supports for teachers. The Unit Overview gives a summary of the unit. A Unit Map outlines the driving question and how it is answered in each chapter. A Progress Build section describes the way in which students'

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
☒ Yes ☐ No			explanations of the central phenomenon should develop and deepen over the course of a unit. This section also includes Materials and Preparation that lists all of the materials provided by kit as well as those that are to be provided by the teacher. Getting Ready to Teach outlines tasks the teacher needs to do to prepare ahead of time (such as printing needed posters and copies, organizing students into groups or partners) and offers suggestions for classroom management during activities and during clean up. The Standards at a Glance lists Louisiana Student Standards for Science, ELA, and Math addressed in the unit. A Science Background section is also included at the beginning of each unit. This section provides teachers with background knowledge on the three dimensions covered within the unit and notes preconceptions students may have that could interfere with learning. For example, in the Changing Landforms Unit an explanation of the processes that shape the land (DCIs), a description of the purpose of functional and conceptual scientific models (SEP), and an explanation of the CCC stability and change is provided. Common preconceptions are also noted. For example, the materials warn that students often find it difficult to believe that wind and water can change something as hard as a rock. Instead, they often believe that rocks exist exactly as they were formed. To counter this preconception, the materials focus on changes due to erosion and introduce scale as playing a role in our ability to find observable evidence of erosion. Student exemplars are embedded within the unit materials. For example, in the Properties of Materials Unit, Lesson 2.2, student exemplar or “look for” responses are provided after teacher questions to help teachers check for understanding. A “say” icon indicates a teacher question, “What happens to wax crayons when you heat them?” Student exemplar responses are indicated with [ ] [e.g., They melt. They become liquid wax.]. Student

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			exemplar investigative notebook responses are also provided under the "Possible Responses" tab. In Lesson2.2, responses to notebook page 3, Observations for Cornstarch and Water Mixtures (Heated and Cooled) are, "thick, fluffy, white." Teacher supports are embedded within lessons. One example, found under the Teacher Support tab, provides notes on pedagogical and instructional strategies. For example, in the Changing Landforms Unit, Lesson 2.2, in the second activity, the Teacher Support tab offers support in managing hands-on models as the students investigate chalk models along with the pedagogical goal for the chalk model and an explanation.
	6b) Appropriate suggestions and materials are provided for **differentiated instruction** supporting varying student needs at the unit and lesson level (e.g., alternative teaching approaches, pacing, instructional delivery options, suggestions for addressing common student difficulties to meet standards, etc.).	**Yes**	Appropriate suggestions and materials are provided for differentiated instruction to support varying student needs at the unit and lesson level. Each lesson includes a section titled Differentiated Instruction. Suggestions are given for students struggling, English Learners, and those who need extension. There are specific suggestions for each lesson under the tab labeled Teacher Support within the online Instructional Guide that contain instructional suggestions, including time management, extensions, and clarification of misconceptions. For example, in the Properties of Materials Unit, Lesson 4.1, embedded diverse learner supports include a "Gradual release of responsibility for creating new glue recipes and Class discussion before writing." The material guidance explains that students will work together to analyze Jess's Substance Table 2 before students begin using tables to represent their own data. Additionally, students will work with a partner to complete the lesson task in order to provide proper scaffolding and opportunities for comparative analysis. A class discussion prior to writing provides students with the reference of thinking like an engineer,

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			reassessing their design using test results, and providing a new design supported by evidence. Language supports for students are also embedded in lessons. Key concepts and vocabulary are routinely posted and referred to by the teacher and students in order to encourage students to use scientific language in their oral and written explanations. For example, in the Changing Landforms unit, Lesson 2.6, students are asked to write a scientific explanation of how the cliffs at the (imaginary) Oceanside Recreation Center have changed. The requirements of scientific explanation are described to the students, one of which includes "It uses science words." Posted vocabulary and key concepts are readily available for students' use. Additionally, in the Differentiation section of the Lesson Brief, the teacher is reminded to review all terms and concepts for students who need more support reading those statements on their own. It is also suggested that the teacher use the sentence frames "Landforms change shape because________." and "The cliff changed because ________." as a differentiation strategy to specifically target English learners. For this same task, it is suggested that students who need more of a challenge complete the writing independently and/or describe a few pieces of evidence to support their answer. Another example of instructional suggestions for challenging advanced students is found in the Plant and Animal Relationships Unit, Lesson 4.2. The materials suggests that students generate additional questions that could be investigated about the sal and red silk tree seeds. From the generated list, students choose a question and write out a plan for conducting this additional investigation.
Additional Criterion **7. USABILITY:** Materials are easily accessible, promote safety in the science	**REQUIRED** **7a)** Text sets (when applicable), laboratory, and other scientific materials are **readily accessible** through vendor packaging.	**Yes**	Text sets, laboratory, and other scientific materials are readily accessible through vendor packaging. Students have access to student apps and text through the digital platform. Each unit contains an Investigation Notebook which contains needed

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
classroom, and are viable for implementation given the length of a school year. ☒ Yes ☐ No			materials for the unit. Each unit incorporates reference books that are incorporated into the lesson. These books are accessible as eBooks. Packaged kits are also available for purchase. All needed supplies for each lesson are listed at the beginning of each unit in the Planning for the Unit section under the heading Materials and Preparation. For example, for Lesson 1.1 in the Properties of Materials Unit, students examine substances. For the lesson, groups of students need plastic bags containing cinnamon powder, cornstarch, and salt, all of which are provided in the materials kit. (Flour is also needed, but is to be provided by the teacher.) Plastic tubs and trays are also used, which are included in the science starter kit or can be supplied by the teacher. The Pre-Unit Writing, the Pre-Unit Assessment questions, and the Assessment guide for teachers are all available as digital resources that can be printed by the teacher. Numerous other digital resources are also available and are readily accessible. For example in the Plant and Animal Relationships unit, student text such as My Nature Notebook, A Plant is a System, Habitat Scientist, Investigating Seeds, and Handbook of Habitats are available for print or display through vendor links. Additional resources are provided at the lesson level such as the lesson projections, the Growing Roots game copy master, and the Sun and Leaves Model which are available for Digital Display or in PDF form for printing in support of the lesson objectives in Lesson 2.3.
	7b) Materials help students build an understanding of standard operating procedures in a science laboratory and include **safety** guidelines, procedures, and equipment. Science classroom and laboratory safety guidelines are embedded in the curriculum.	**Yes**	Materials help students build an understanding of standard operating procedures in a science laboratory and include safety guidelines, procedures, and equipment. Science classroom and laboratory safety guidelines are embedded in the curriculum. For example, within the Investigation Notebook for each unit, safety guidelines are

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			addressed on page 1. Safety notes such as "Don't taste things," "Smell things like a Chemist," and "Protect your eyes" are given. Additional safety notes are located within the lessons. Safety warnings are additionally called out within specific lessons. For example, in the Hands-On section of Lesson 1.3 of the Properties of Materials Unit, a safety note is immediately visible warning not to open or allow students to open glue samples because of the fumes. They remind teachers to demonstrate to students how to smell the two glues that they are working with as a scientist would. Furthermore, safety equipment such as goggles are included with the materials and teachers are instructed as to their use. For example, in the Changing Landforms unit, Lesson 2.2, Overview, Materials & Preparation, teachers are instructed to supply each group with enough safety goggles for each person. This lesson involves students spraying chalk blocks with water in order to simulate cliffs eroding. Teachers are also instructed in this lesson to establish some guidelines such as students should wear safety goggles during the investigation and only point the spray bottles at the chalk blocks.
	7c) The total amount of content is **viable** for a school year.	**Yes**	The total amount of content is viable for a school year. The instructional materials contain 3 units. There are 22 lessons in each unit which are approximately 45 minutes in length. The materials provide suggested time allotments for each stage of each lesson to assist teachers with planning and time management, making the content viable for a school year.
Additional Criterion **8. ASSESSMENT:** Materials offer assessment opportunities that genuinely measure progress and elicit direct, observable evidence of the degree	**REQUIRED** **8a) Multiple types** of formative and summative assessments (performance-based tasks, questions, research, investigations, and projects) are embedded into content materials and assess the learning targets.	**Yes**	Multiple types of formative and summative assessments are embedded into content materials and assess the learning targets. Formative assessments, such as pre-unit assessments, on the fly assessments, self-assessments, and critical juncture writing assessments are included in each unit. End of Unit

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
to which students can independently demonstrate the assessed standards. ☒ Yes ☐ No			Assessments and rubrics are also provided. The materials provide an "Assessment System" document at the beginning of each unit which notes the lesson, the assessment opportunities, the science standards involved in the task organized by the three dimensions, and evaluation guidance. In addition, the unit's "Progress Build" section "describes the way students' understanding of the unit content should develop and deepen through engagement with the unit's learning experiences." Assessment focuses are also provided on the "At a Glance" tables for the "Critical Juncture" Assessments and "On-the-Fly" Assessments for each unit. In the Plant and Animal Relationships Unit, Critical Juncture assessments in Lessons 1.7, 2.4, and 3.6 are points in the unit that are especially important that all students understand the content before continuing. In Lesson 1.7, students write about how plants grow. In Lesson 2.4, students are presented with a 3D performance task: using models to determine good places for seeds to grow. Another 3D performance task is offered in Lesson 3.6 as students explain why the Chalta seeds aren't getting to places where they can grow. These formative assessments provide information to teachers about the level at which students understand the content. In Lessons 4.2 and 4.3, students are tasked with a summative performance-based task to determine how seeds that animals don't use for food get dispersed during an investigation. In the Properties of Materials Unit, Lesson 1.4, students make a claim during an On-the-Fly Assessment as to whether or not Glue A and Glue B are the same substance. Students provide evidence to support their claims. Teachers formatively review student evidence to determine if it supports their chosen claim. In Lesson 4.4, students complete a summative End-of-Unit assessment as they write a letter to their principal presenting a design

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			argument and supporting it with evidence. In the Changing Landforms Unit, Lesson 1.5, the On-the-Fly Assessment involves the teacher informally assessing student understanding that rock, including sand, can change, by listening as the students engage in conversations comparing their sand samples. In Lesson 1.6, students work together to construct a scientific explanation which explains why the edge of the cliff is closer to the flagpole than it was before, by using evidence of how water can change the shape of the land. In Lesson 2.4, students create diagrams to show how land erodes and share the diagrams with the class. In Lesson 2.6, students record reflections in a self-assessment. They rate "I understand…" statements as a "yes" or "not yet" and record any wonderings that they have about the unit so far in order to rate their own progress. In Lesson 3.3, students write explanations of how small changes can accumulate to create a big change, as in the case of erosion. In Lesson 3.4, students use digital devices to explore how long it takes for erosion to occur followed by a Critical Juncture Assessment in which students answer questions about changes overtime in their notebooks. Finally, in Lesson 3.5, students complete a two part End-of-Unit Assessment by answering the questions "How did the recreation center's cliff erode without the director noticing?" and by diagramming what would happen to a cliff 1 and 1 million years from now. The summative assessments have minimal questions that do not assess all learning targets taught within the units.
	REQUIRED **8b)** Assessment items and tasks are structured on integration of the **three-dimensions**.	**Yes**	Assessment items and tasks are structured on integration of the three-dimensions. For example, in the Plant and Animal Relationships Unit, Lesson 2.5, Activity 3, a Critical Juncture formative assessment asks students to explain why Chalta seeds aren't getting what they need to grow.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			This assessment asks students to work together to write a scientific explanation (SEP, Constructing Explanations) to answer the question. Teachers use this to assess students understanding that in order to grow(CCC, Cause and Effect), seeds need space for their roots (CCC, Structure and Function) to spread to get water and for their leaves to get sunlight(DCI, LE.LS2A.a). In the Properties of Materials Unit, students are assessed on the three dimensions as they construct written arguments for their solutions by using evidence (SEP, Engage in Argument from Evidence) to show that the ingredients they propose will Cause (CCC) their glue mixture to best meet their design goals of being sticky, strong, smooth, and spreadable (DCI LE.PS1A.c). In the Changing Landforms Unit, Lesson 1.6, a Critical Juncture formative assessment assesses students' ability to write a scientific Explanation (SEP) for how the edge of the cliff got to be so close to the flagpole (DCI, LE.ESS1C.a) with the understanding that rocks and landforms can change over time (CCC, Stability and Change).
	8c) Scoring guidelines and rubrics **align** to performance expectations, and incorporate criteria that are specific, observable, and measurable.	**Yes**	Scoring guidelines and rubrics align to performance expectations, and incorporate criteria that are specific, observable, and measurable. Student Look Fors and Possible Student Responses are given to guide teachers in assessment of student understanding. For example, in the Properties of Materials Unit, Lesson 4.4, students complete an End-of-Unit Writing assessment by writing about a final glue design. A rubric is provided to ensure students have revealed their understanding of the science concepts presented in the lesson, the Crosscutting Concepts of Patterns and Cause and Effect, and the Science and Engineering Practice of Constructing Explanations. The rubric provides possible explanations to assess student's understanding of

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			the science ideas of the unit, as well as criteria that incorporates Patterns and Cause and Effect as evidence to support the explanation. Additionally, student responses are provided for each of the On the Fly Assessments. For example, in Lesson 4.2 of Plant and Animal Relationships, teachers are provided with a tab called "Possible Responses" in the Instructional Guide. In addition, each On-the-Fly Assessment includes a plan on what to look for and what to do next. In Lesson 4.2, teachers are instructed to "look for" how students are determining what their purpose for investigating is and determining if their purpose aligns with the questions. Teachers are also asked to think about what criteria students use for choosing measurement options and whether students keep the purpose for investigating in mind as they determine which measurement option is best. In the "now what" section suggestions about how teachers may adjust their instructions are offered.

FINAL EVALUATION

Tier 1 ratings receive a "Yes" in Column 1 for Criteria 1 – 8.

Tier 2 ratings receive a "Yes" in Column 1 for all non-negotiable criteria, but at least one "No" in Column 1 for the remaining criteria.

Tier 3 ratings receive a "No" in Column 1 for at least one of the non-negotiable criteria.

Compile the results for Sections I and II to make a final decision for the material under review.

Section	Criteria	Yes/No	Final Justification/Comments
I: Non-Negotiables	1. Three-dimensional Learning	**Yes**	Materials are designed so that students develop scientific content knowledge and scientific skills through interacting with the three dimensions of the science standards. The majority of materials integrate the science and engineering practices, crosscutting concepts, and disciplinary core ideas to support deeper learning.
	2. Phenomenon-Based Instruction	**Yes**	Observing and explaining phenomena and designing solutions provides the purpose and opportunity for students to engage in learning a majority of the time. There is opportunity for improvement in the approach to phenomena throughout the materials.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
	3. Alignment & Accuracy	**Yes**	The majority, 10 out of 11 or 91%, of the Louisiana Student Standards for Science are incorporated to the full depth of the standard. Minimal time is spent on content outside of the grade band.
	4. Disciplinary Literacy	**Yes**	Students participate in a variety of tasks that help them develop a deeper understanding of science content. Students develop models, complete investigative tasks, and regularly speak and write as they draw conclusions and make claims supported by scientific evidence. Vocabulary is presented throughout the unit as needed, but students are often told definitions and do not have the opportunity to create meanings for themselves.
II: Additional Indicators of Quality	5. Learning Progressions	**Yes**	The overall organization of the materials supports student mastery of the standards. The progression of learning for the Disciplinary Core Ideas are coherent and organized to ensure student mastery.
	6. Scaffolding and Support	**Yes**	There are separate teacher support materials and appropriate suggestions for multiple types of learners within the materials.
	7. Usability	**Yes**	Text sets, laboratory, and other scientific materials are readily accessible through vendor packaging. Safety notes and guidelines are embedded within the curriculum and a viable amount of material is provided to be completed within the school year.
	8. Assessment	**Yes**	Formative and summative assessments that assess the learning targets are included within the curriculum. Assessment tasks are structured on integration of the three-dimensions and scoring guidelines align to performance expectations.
FINAL DECISION FOR THIS MATERIAL: **Tier I, Exemplifies quality**			

Strong science instruction requires that students:

- Apply content knowledge to explain real world phenomena and to design solutions,
- Investigate, evaluate, and reason scientifically, and
- Connect ideas across disciplines.

Title: **Amplify Science Louisiana** Grade/Course: **3**

Publisher: **Amplify Education, Inc.** Copyright: **2019**

Overall Rating: **Tier I, Exemplifies quality**

Tier I, Tier II, Tier III Elements of this review:

STRONG	WEAK
1. Three-dimensional Learning (Non-Negotiable)	
2. Phenomenon-Based Instruction (Non-Negotiable)	
3. Alignment Accuracy (Non-Negotiable)	
4. Disciplinary Literacy (Non-Negotiable)	
5. Learning Progressions	
6. Scaffolding and Support	
7. Usability	

To evaluate each set of submitted materials for alignment with the standards, begin by reviewing the indicators listed in Column 2 for the non-negotiable criteria. If there is a "Yes" for all required indicators in Column 2, then the materials receive a "Yes" in Column 1. If there is a "No" for any required indicator in Column 2, then the materials receive a "No" in Column 1. Submissions must meet Criteria 1 and 2 for the review to continue to Criteria 3 and 4. Submissions must meet all of the non-negotiable criteria in order for the review to continue to Section II.

For Section II, begin by reviewing the required indicators in Column 2 for each criterion. If there is a "Yes" for all required indicators in Column 2, then the materials receive a "Yes" in Column 1. If there is a "No" for any required indicators in Column 2, then the materials receive a "No" in Column 1.

Tier 1 ratings receive a "Yes" in Column 1 for Criteria 1 – 8.
Tier 2 ratings receive a "Yes" in Column 1 for all non-negotiable criteria, but at least one "No" in Column 1 for the remaining criteria.
Tier 3 ratings receive a "No" in Column 1 for at least one of the non-negotiable criteria.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
Non-Negotiable **1. THREE-DIMENSIONAL LEARNING:** Students have multiple opportunities throughout each unit to develop an understanding and demonstrate application of the three dimensions. ☒ Yes ☐ No	**REQUIRED** **1a)** Materials are designed so that students develop scientific content knowledge and scientific skills through interacting with the three dimensions of the science standards. The majority of the materials teach the science and engineering practices (SEP), crosscutting concepts (CCC) and disciplinary core ideas (DCI) separately when necessary but they are most often integrated to support deeper learning.	**Yes**	Materials are designed so that students develop specific content knowledge and scientific skills through interacting with the three dimensions of the science standards. The majority of materials integrate the Science and Engineering Practices (SEP), Crosscutting Concepts (CCC), and Disciplinary Core Ideas (DCI) to support deeper learning. For example, in the Weather and Climate Unit, Lesson 2.3, students examine one month temperature data from three different locations using line plots (SEP, Analyzing and Interpreting Data). Students find and record temperature ranges from each location and compare temperatures and precipitation amounts (SEP, Using Mathematical and Computational Thinking) and identify and use Patterns (CCC) within each line plot to make predictions about what kind of weather might happen next (DCI, UE.ESS2D.a). In Chapter 3, students build upon this understanding as they observe graphs of average high temperatures across many years and discuss (SEP, Obtaining, Evaluating, and Communicating Information) that changes in temperature over time for a particular place repeat each year to form Patterns (SEP) that can be described as climate (DCI, ESS2D.b). Another example of three-dimensional learning is in the Environments and Survival Unit, Lesson 2.2. Students read the book Mystery Mouths and engage in Analyzing and Interpreting Data (SEP) related to the various structures of mouths to determine their functions (CCC, Structure and Function). Students make and record inferences about what various animals eat after they observe pictures of each skull. Students then read about the animal traits, what they eat, and in which environment they best survive based on their skulls (DCI, UE.LS4C.a).

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
Non-Negotiable **2. PHENOMENON-BASED INSTRUCTION:** Explaining phenomenon and designing solutions drive student learning. ☒ Yes ☐ No	**REQUIRED** **2a)** Observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning a majority of the time.	**Yes**	Observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning. For example, in the Balancing Forces Unit, students are introduced to the anchor phenomenon of a floating train that will be used as a new train service. Students are challenged to figure out how the floating train works. This provides purpose and opportunity for students to engage in the lessons that follow. In Chapter 1, students explore force and understand that forces are acting upon the train to make it move. In Lesson 1.2, students create pushes and pulls using wooden blocks in order to answer the question "What makes an object start to move?" Through this firsthand experience, students build the understanding that each time they push or pull on an object, it is an example of force. In Chapter 2, students explore magnets and explain how the train rises from the track without touching it. In Chapter 3, students investigate the force of gravity and how this affects the train and other objects on Earth. In Lesson 3.1, students drop and hold objects to experience the downward force on each object. Chapter 4 and 5 include opportunities for students to explore unbalanced forces and help to explain why the train floats even though gravity acts upon it. At the end of the unit, students connect back to the anchor phenomenon as they write a scientific explanation about the floating train, synthesizing all they have learned about gravity, magnetic force, and the ways in which multiple forces can act at the same time to create balance or unbalanced forces. In the Weather and Patterns Unit, the anchor phenomenon challenges students to investigate weather patterns on three fictional islands as they solve the problem of where to establish an orangutan reserve. This provides purpose and opportunity for students to engage in the lessons that follow. In Chapter 1, students investigate how to measure temperature and precipitation and compare weather in different locations in order to answer the question, "Which island's weather would

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			be best for orangutans?" In Chapter 2, students analyze patterns in line plots to make predictions about weather to answer the question, "Which island's weather will continue to be best for orangutans?" In Chapter 3, students analyze bar graphs of average temperature and precipitation, compare weather, seasons, and climate, and continue to make predictions about weather. In Lesson 3.7, students connect back to the anchor phenomenon as they write a scientific argument to answer the question, "Over many years, which island's weather will be the best for orangutans?" Finally, in Chapter 4, students investigate global climate patterns in order to discover where weather-related natural hazards happen. Students use what they have learned about weather and climate to find a solution that will protect the Wildlife Protection Organization's office building, then relate these ideas to their own lives. Students also have opportunities to design solutions, test theories, and make improvements to designs. In the Environment and Survival Unit, Lesson 4.2, students are challenged to create a "RoboGrazer" which helps to pull up invasive plants species and grind them up. Students design, test, and improve a model of the "RoboGrazer" using animal models, such as a giraffe neck, for inspiration. There is opportunity for improvement in the approach to phenomena throughout the materials. Materials often call for the teacher to visibly post a unit question prior to students' exposure to a phenomenon, and unit and chapter questions or problems are often identified for students without an explicit embedded opportunity for students to first generate these (or similar) questions and problems on their own.
Non-Negotiable (only reviewed if criteria 1 and 2 are met) **3. ALIGNMENT & ACCURACY:**	**REQUIRED** **3a)** The majority of the Louisiana Student Standards for Science are incorporated, to the full **depth of the standards**.	**Yes**	100% (15 out of 15) of Louisiana Student Standards for Science for Grade 3 are addressed to the full depth of the standards.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
Materials adequately address the Louisiana Student Standards for Science. ☒ Yes ☐ No	**REQUIRED** **3b)** Science content is **accurate**, reflecting the most current and widely accepted explanations.	**Yes**	The majority of the content is accurate and up-to-date, reflecting the most current and widely accepted explanations.
	3c) In any one grade or course, instructional materials spend minimal time on content outside of the course, grade, or grade-band.	**Yes**	The instructional materials spend minimal time on content outside of the grade-band.
Non-Negotiable (only reviewed if criteria 1 and 2 are met) **4. DISCIPLINARY LITERACY:** Materials have students engage with authentic sources and incorporate speaking, reading, and writing to develop scientific literacy. ☒ Yes ☐ No	**REQUIRED *Indicator for grades 4-12 only** **4a)** Students regularly engage with **authentic sources** that represent the language and style that is used and produced by scientists; e.g., journal excerpts, authentic data, photographs, sections of lab reports, and media releases of current science research. Frequency of engagement with authentic sources should increase in higher grade levels and courses.	**N/A**	
	REQUIRED **4b)** Students regularly engage in **speaking and writing** about scientific phenomena and engineering solutions using authentic science sources; e.g., authentic data, models, lab investigations, or journal excerpts. Materials address the necessity of using **scientific evidence** to support scientific ideas.	**Yes**	Students regularly engage in speaking and writing about scientific phenomena and engineering solutions using authentic sources. Materials address the necessity of using scientific evidence to support ideas. In a majority of chapters and throughout the units, students produce a written scientific explanation that details their understanding of the anchor and/or investigative phenomenon of the chapter or lesson. For example, in the Weather and Climate Unit, students participate in evidence circles to discuss which claim about finding the best long-term location for an orangutan reserve is best supported by evidence. This activity connects to the anchoring phenomenon of the unit. Students use this evidence to write a scientific argument. In the Environments and Survival Unit, Lesson 2.5, students engage in concept mapping and discuss the relationship between traits and survival of organisms. In Lesson 2.6, students connect these ideas to the grove snail population and write a scientific explanation about why snails with banded shells are more likely to survive. In the Inheritance

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			and Traits Unit, Lesson 2.2, students participate in a "Think-Pair-Share" activity discussing the patterns of fruit fly parents and their offspring such as wing shape and body color which is based on a diagram of the parents and their offspring. Students read to learn more about these patterns, then record new ideas about parents and offspring in their Investigative Notebook.
	REQUIRED **4c)** There is **variability** in the tasks that students are required to execute. For example, students are asked to produce solutions to problems, models of phenomena, explanations of theory development, and conclusions from investigations.	**Yes**	There is variability in the tasks that students are required to execute throughout the instructional materials. Students engage in a variety of tasks including making observations; making, writing, and supporting claims; using simulations to generate ideas and analyze data; and creating models. In the Weather and Climate Unit, Lesson 1.4 students observe daily weather and record data to analyze weather patterns. In Lesson 2.5, students identify relevant evidence to support the claim that one island may be a better home for the orangutan as opposed to another. In Lesson 4.3, students plan and build a hurricane-resistant structure to identify effective features of those structures. In the Balancing Forces Unit, in Lesson 2.2, students test the magnetic forces of various objects. Students first predict whether or not magnetic forces will act on the object. Students record their predictions in a table, indicating whether it is metal or not. Students then test each item to determine whether it is magnetic. Students engage in discussion about their observations by making claims, with evidence, about whether or not the objects are magnetic. Students complete the activity by writing a sentence that shares their conclusion from the investigation. In the Environments and Survival Unit, Lesson 3.3, students read Environmental News to investigate "why there are more cliff swallows with short wings 30 years after the highway was built." Students discuss their ideas with partners and then with the class. Students then use the digital Environments and Surviving Modeling Tool: Environment Change

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			to analyze an environmental change. Students build a model on this digital tool to show which organisms are the most likely and least likely to survive in each environment based on animal traits. Students then complete a Critical Juncture Assessment by explaining which traits for mouth structure and foot structure are adaptive and must explain their thinking.
	4d) Materials provide a coherent sequence of authentic science sources that build scientific **vocabulary** and knowledge over the course of study. Vocabulary is addressed as needed in the materials but not taught in isolation of deeper scientific learning.	**No**	Vocabulary is presented throughout the unit as needed, but students are often told definitions and do not have the opportunity to create meanings for themselves. Often, students are frontloaded definitions and then participate in an isolated vocabulary activity of writing sentences or completing multiple meaning activities. For example in the Balancing Forces Unit, Lesson 1.1, while introducing the investigation notebook the teacher states, "The word investigate means to study or try to learn more about something. When scientists investigate, what they are doing is called an investigation." In Lesson 2.1, after reviewing force, the teacher discusses the definitions of a touching force and non-touching force. Students are not asked to determine the meaning or definition; instead, the teacher tells the students the meaning of the words and places them on the vocabulary wall. This is seen again in the Inheritance and Traits Unit, Lesson 1.2, where the teacher introduces the term organism and is to use the same approach of giving the students the definition and then posting it to the vocabulary wall. Throughout the Investigation Notebook in the Balancing Forces Unit, students are guided through a Multiple Meaning Words activity in which they are introduced to words that have different meanings. The meanings or definitions of each word are provided to them in a table. The students then determine the meaning of the word used in the sentence provided. In Lesson 1.3, students differentiate between multiple meanings of the words force, point, and object.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
SECTION II: ADDITIONAL INDICATORS OF QUALITY			
Additional Criterion **5. LEARNING PROGRESSIONS:** The materials adequately address Appendix A: Learning Progressions. They are coherent and provide natural connections to other performance expectations including science and engineering practices, crosscutting concepts, and disciplinary core ideas; the content complements the the Louisiana Student Standards for Math. ☒ Yes ☐ No	**REQUIRED** **5a)** The overall organization of the materials and the development of disciplinary core ideas, science and engineering practices, and crosscutting concepts are coherent within and across units. The **progression of learning** is coordinated over time, clear and organized to prevent student misunderstanding and supports student mastery of the performance expectations.	Yes	The lessons within and across each unit are organized to support learning through a natural progression. Students engage with and build an understanding of the three dimensions of the standards at increasing levels of complexity and sophistication and engage in a coherent progression of learning that is coordinated over time, clear, and organized. For example, in the Inheritance and Traits Unit, the Crosscutting Concept of Patterns is presented in Lesson 1.3 as part of the discussion on the similarities and differences in traits among birds. In Lesson 1.5, students examine members of a wolfpack notating similarities and variations in traits, again noticing patterns among the pack. In Lesson 2.5, students use the Inheritance and Traits modeling tool to examine the inheritance of traits within the wolf pack and look for patterns that exist. In the Weather and Climate Unit, the Science and Engineering Practice of Analyzing and Interpreting Data is presented in Lesson 1.2 as students measure rain as part of a hands-on activity in order to describe and compare amounts of rainfall in two different locations. In Lesson 1.3, the teacher models how to read a thermometer. Students read thermometers to collect data and interpret varying temperatures. In Lesson 1.4, students begin recording data of daily weather and continue to analyze data throughout the unit.
	5b) Students apply mathematical thinking when applicable. They are not introduced to math skills that are beyond the applicable grade's expectations in the Louisiana Student Standards for Mathematics. Preferably, **math connections** are made explicit through clear references to the math standards, specifically in teacher materials.	Yes	Students apply mathematical thinking when applicable, and mathematical standard correlations are stated within the standards overview. For example, in the Balancing Forces Unit, Lesson 5.1, students measure the distance between a magnet and a paper clip to demonstrate non touching forces. This activity correlates to standard 3.MD. A. 4 "Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch." In the Weather and Climate Unit, Lesson 1.2,

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			students measure rainfall with cubes and compare different amounts of rain. Students also complete a temperature investigation in Lesson 1.3 by using and reading thermometers to measure temperature. Students practice interpreting the scale and intervals of the thermometer and recording temperatures. In Lesson 2.3, students read line plots and find temperature ranges.
Additional Criterion **6. SCAFFOLDING AND SUPPORT:** Materials provide teachers with guidance to build their own knowledge and to give all students extensive opportunities and support to explore key concepts using multiple, varied experiences to build scientific thinking. ☒ Yes ☐ No	**REQUIRED** **6a)** There are separate **teacher support** materials including: scientific background knowledge, support in three-dimensional learning, learning progressions, common student misconceptions and suggestions to address them, guidance targeting speaking and writing in the science classroom (i.e. conversation guides, sample scripts, rubrics, exemplar student responses).	**Yes**	There are separate teacher support materials provided. Support materials within each lesson include scientific background knowledge, support in three-dimensional learning, learning progressions, common student misconceptions and suggestions to address them, guidance targeting speaking, and writing in the science classroom. Each unit provides resources used for planning the unit. The Unit Overview describes what students should figure out, why they should figure it out, and how they figure it out by the end of the unit. The Unit Map describes what students figure out and how for each Chapter. The Progression Build describes how the phenomena builds on the learning throughout each unit. The Materials and Preparations section provides information on what materials are needed for each activity and how the teacher needs to prepare for each of these activities. The Science Background section provides background information about the DCIs, SEPs, and CCCs addressed in the unit. The Standards at a Glance section lists the Student Standards for Science, ELA, and Math addressed in the unit. A Teacher Reference Section includes Lesson Overview Compilation, Standards and Goals, 3-D Statements, Assessment System, Embedded Formative Assessments, Books in This Unit, Apps in this Unit, and Flextensions in This Unit. Each lesson provides an Overview, Differentiation strategies, Materials and Preparation, and Standards specific to that lesson. Each unit includes a Teacher's Guide with all of the above components along with other resources to help the teacher prepare for and teach

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			each unit.
	6b) Appropriate suggestions and materials are provided for **differentiated instruction** supporting varying student needs at the unit and lesson level (e.g., alternative teaching approaches, pacing, instructional delivery options, suggestions for addressing common student difficulties to meet standards, etc.).	Yes	Appropriate suggestions and materials are provided for differentiated instruction to support varying student needs at the unit and lesson level. Each lesson includes a section titled Differentiated Instruction. Within this section suggestions are given for students struggling, English Learners, and those who need an extension. In the Inheritance and Traits Unit, Lesson 3.3, students are asked to write about the traits of Wolf 44's Hunting Style. A secondary sheet is provided with a topic sentence and sentence frames for each main idea in the explanation to help struggling learners. For students who need more challenge, there are differentiation strategies that suggests students create a Venn diagram to show the inherited traits of their class, traits that result from the environment, and traits that result from the combination of inheritance and the environment. Students then use the diagram to write about traits and where they come from. In the Environments and Survival Unit, Lesson 3.3, embedded support is provided for diverse learners. The students use the Environments and Survival Model Tool to create visual models of their ideas in order to consolidate learning. Vocabulary support suggested for English Learners emphasizes the use of specific descriptive words such as, "rounded beak, pointy beak, clawed feet, and webbed feet."
Additional Criterion **7. USABILITY:** Materials are easily accessible, promote safety in the science classroom, and are viable for implementation given the length of a school year. ☒ Yes ☐ No	**REQUIRED** **7a)** Text sets (when applicable), laboratory, and other scientific materials are **readily accessible** through vendor packaging.	Yes	Text sets, laboratory, and other scientific materials are readily accessible through vendor packaging. Students have access to student apps and text through the digital platform. Each unit contains an Investigation Notebook which contains needed materials for the unit. Each unit incorporates reference books into the lesson which are accessible as eBooks. The packaged kits are also available for purchase.
	7b) Materials help students build an understanding of standard operating procedures in a science laboratory and include **safety** guidelines, procedures, and	Yes	Materials help students build an understanding of standard operating procedures in a science laboratory and include safety guidelines,

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
	equipment. Science classroom and laboratory safety guidelines are embedded in the curriculum.		procedures, and equipment. Science classroom and laboratory safety guidelines are embedded in the curriculum. For example, within the Investigation Notebook for each unit, safety guidelines are addressed on page 1. Safety notes such as "Don't taste things" are given. Additional safety notes are located within the lessons, as needed. For example, In the Balancing Forces Unit, Lesson 5.3, students investigate how a magnetic force can be made to stop acting. A safety note about using a 1.5 volt D battery cautions, "Do not use a rechargeable battery. The wires can get hot very quickly, putting you at risk for small burns."
	7c) The total amount of content is **viable** for a school year.	**Yes**	The total amount of content is viable for a school year. The instructional materials contain four units with twenty-two lessons each. Each lesson contains sixty minutes of instructional time.
Additional Criterion **8. ASSESSMENT:** Materials offer assessment opportunities that genuinely measure progress and elicit direct, observable evidence of the degree to which students can independently demonstrate the assessed standards. ☒ Yes ☐ No	**REQUIRED** **8a) Multiple types** of formative and summative assessments (performance-based tasks, questions, research, investigations, and projects) are embedded into content materials and assess the learning targets.	**Yes**	Multiple types of formative and summative assessments are embedded and assess the learning targets. Formative assessments such as pre-unit assessments, On-The-Fly assessments, self-assessments, and critical juncture writing assessments are included in each unit. End-of-Unit Assessments and rubrics are also provided. For example, in the Weather and Climate Unit, Lesson 1.1, students write what they know about the weather and how it relates to climate as part of a Pre-Unit Assessment. In Lesson 1.6, an On-the-Fly Assessment allows students to use evidence to support a claim about which island would be best suited for the orangutan. These formative assessment opportunities build to the summative assessment such as in Lesson 3.7, where students present a final argument about which island would be best suited for the orangutan population based on all evidence about weather and patterns that have been discovered. In Lesson 4.4, End-of-Unit Assessment, students choose one of the given claims and write a scientific argument with supporting evidence to answer the question, "What changes should the Wildlife Protection Organization make to their building in order to protect it from

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			other natural hazards?”
	REQUIRED **8b)** Assessment items and tasks are structured on integration of the **three-dimensions**.	**Yes**	Assessment items and tasks are structured on the integration of the three-dimensions. In the Balancing Forces Unit, Lesson 5.5, the summative assessment provides the opportunity for students to assess their knowledge of the three dimensions. On the End-of-Unit Assessment, students apply what they have learned about gravity, magnetic force, and balanced and unbalanced forces to explain the floating train, why it rises and falls, and why it is sometimes stable (DCI, EU.PS2B.b). Students are also asked to Explain (SEP) why the train may change from floating to falling (CCC, Cause and Effect). In the Environments and Survival Unit, Lesson 3.4, End-of-Unit Assessment, students are asked “Why were snails with yellow shells more likely to survive in their environment 10 years ago?” Students Construct an Explanation (SEP) about why snails with yellow shells (CCC, Structure and Function) are more likely to survive in their environments 10 years ago (DCI, UE.LS4Ca). Students also consider changes that have happened in the environment over the past 10 years that also affect (CCC, Cause and Effect) the organism's ability to survive (DCI, UE.LS2C.a).
	8c) Scoring guidelines and rubrics **align** to performance expectations, and incorporate criteria that are specific, observable, and measurable.	**Yes**	Scoring guidelines and rubrics align to performance expectations and incorporate criteria that are specific, observable, and measurable. Student Look Fors and Possible Student Responses are given to guide teachers in their assessment of student understanding. In the Environments and Survival Unit, Lesson 1.3, students read about earthworms and are to connect the needs of the organism to its environment. Students make inferences and the teacher uses the discussions as a formative assessment. In the Inheritance and Traits Unit, Lesson 3.6, End of Unit Assessment, students use information and data about wolves that they have gathered from text, hands-on experiences, and their understanding of traits and inheritance to write a scientific explanation about how Wolf 44’s size was determined. A rubric is provided to ensure students

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			have revealed their understanding of the science concepts as presented in the lesson, through the Crosscutting Concept of Patterns, and the Science and Engineering Practice of Constructing Explanations. The rubric provides possible explanations to assess student understanding.

FINAL EVALUATION
Tier 1 ratings receive a "Yes" in Column 1 for Criteria 1 – 8.
Tier 2 ratings receive a "Yes" in Column 1 for all non-negotiable criteria, but at least one "No" in Column 1 for the remaining criteria.
Tier 3 ratings receive a "No" in Column 1 for at least one of the non-negotiable criteria.

Compile the results for Sections I and II to make a final decision for the material under review.

Section	Criteria	Yes/No	Final Justification/Comments
I: Non-Negotiables	1. Three-dimensional Learning	**Yes**	The materials are designed so that students develop scientific content knowledge and scientific skills through interacting with the three dimensions of the science standards. The majority of the materials integrate the Science and Engineering Practices, Crosscutting Concepts, and Disciplinary Core Ideas to support deeper learning.
	2. Phenomenon-Based Instruction	**Yes**	Observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning a majority of the time.
	3. Alignment & Accuracy	**Yes**	Each of the Louisiana Students Standards for Science in Grade 3 are incorporated into the full depth of the standards. The content is accurate and up to date reflecting the most current and widely accepted explanations. Minimal time is spent on content outside of the grade band.
	4. Disciplinary Literacy	**Yes**	Students have multiple opportunities to engage with authentic resources and are encouraged to speak and write about scientific phenomenon and engineering solutions with an emphasis on using scientific data to support scientific ideas.
II: Additional Indicators of Quality	5. Learning Progressions	**Yes**	The overall organization of the materials supports student mastery of the standards. The progression of learning for the Disciplinary Core Ideas are coherent and organized to ensure student mastery.
	6. Scaffolding and Support	**Yes**	There are separate teacher support materials and appropriate suggestions for multiple types of

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			learners within the materials.
	7. Usability	**Yes**	Text sets, laboratory, and other scientific materials are readily accessible through vendor packaging. Safety notes and guidelines are embedded within the curriculum and a viable amount of material is provided to be completed within the school year.
	8. Assessment	**Yes**	Formative and summative assessments that assess the learning targets are included within the curriculum. Assessment tasks are structured on the integration of the three-dimensions and the scoring guidelines align to performance expectations.
FINAL DECISION FOR THIS MATERIAL: **Tier I, Exemplifies quality**			

Strong science instruction requires that students:

- Apply content knowledge to explain real world phenomena and to design solutions,
- Investigate, evaluate, and reason scientifically, and
- Connect ideas across disciplines.

Title: **Amplify Science Louisiana** Grade/Course: **4**

Publisher: **Amplify Education, Inc.** Copyright: **2019**

Overall Rating: **Tier I, Exemplifies quality**

Tier I, Tier II, Tier III **Elements of this review:**

STRONG	WEAK
1. Three-dimensional Learning (Non-Negotiable)	
2. Phenomenon-Based Instruction (Non-Negotiable)	
3. Alignment Accuracy (Non-Negotiable)	
4. Disciplinary Literacy (Non-Negotiable)	
5. Learning Progressions	
6. Scaffolding and Support	
7. Usability	

To evaluate each set of submitted materials for alignment with the standards, begin by reviewing the indicators listed in Column 2 for the non-negotiable criteria. If there is a “Yes” for all required indicators in Column 2, then the materials receive a “Yes” in Column 1. If there is a “No” for any required indicator in Column 2, then the materials receive a “No” in Column 1. Submissions must meet Criteria 1 and 2 for the review to continue to Criteria 3 and 4. Submissions must meet all of the non-negotiable criteria in order for the review to continue to Section II.

For Section II, begin by reviewing the required indicators in Column 2 for each criterion. If there is a “Yes” for all required indicators in Column 2, then the materials receive a “Yes” in Column 1. If there is a “No” for any required indicators in Column 2, then the materials receive a “No” in Column 1.

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Tier 3 ratings receive a “No” in Column 1 for at least one of the non-negotiable criteria.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
Non-Negotiable **1. THREE-DIMENSIONAL LEARNING:** Students have multiple opportunities throughout each unit to develop an understanding and demonstrate application of the three dimensions. ☒ Yes ☐ No	**REQUIRED** **1a)** Materials are designed so that students develop scientific content knowledge and scientific skills through interacting with the three dimensions of the science standards. The majority of the materials teach the science and engineering practices (SEP), crosscutting concepts (CCC) and disciplinary core ideas (DCI) separately when necessary but they are most often integrated to support deeper learning.	**Yes**	Materials are designed so that students develop specific content knowledge and scientific skills through interacting with the three dimensions of the science standards. The majority of materials integrate the Science and Engineering Practices (SEP), Crosscutting Concepts (CCC), and Disciplinary Core Ideas (DCI) to support deeper learning. For example, in the Vision and Light Unit, Lesson 1.3, students begin to build an understanding of how animals use their senses to receive information (DCI, UE.LS1D.a) using Investigating Animal Senses, a book about groups of students who investigate which senses animals use to find food. As the students read, they take turns Asking Questions (SEP) about the content with a partner. Students also examine Cause and Effect (CCC) relationships as they read about the students in the book who observe a lizard and a mealworm and then change one variable at a time to determine how lizards sense food. Students then complete an Investigation (SEP) using their sense of hearing and smell to determine objects inside a cup before and after removing the "hearing and smelling blocks." They discuss the Cause and Effect (CCC) of removing the blocks and how using sight and sound can transfer information about the environment. Students have additional opportunities to engage with the SEPs, CCCs, and DCIs throughout the unit. In Lesson 4.5, students Develop and Use a Model (SEP) of an eye with either high or low sensitivity to light (DCI, UE.PS4B.a). Students use the model to help Investigate (SEP) the question "[h]ow could more light at night make it hard for a Tokay gecko to see its prey?" During the activity, students apply their learning about the Structure and Function (DCI, UE.LS1D.a) of the parts of that eye that allow the animal to see. Students discuss and explain what happens when the brain processes information and how this affects (CCC, Cause and Effect) the amount

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			of light needed to see. In the Earth's Features Unit, Lesson 1.5, students Develop a Model (SEP) to show how a sedimentary rock layer forms over time by using various materials provided to the class. Students Use the Model (SEP) to determine how sediment "sediment cements and forms a rock layer." Developing and examining the model helps build student understanding of how rock formations change over time (DCI, UE.ESS1C.a) and how Patterns (CCC) of sedimentary rock forms over a long period of time.
Non-Negotiable **2. PHENOMENON-BASED INSTRUCTION:** Explaining phenomenon and designing solutions drive student learning. ☒ Yes ☐ No	**REQUIRED** **2a)** Observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning a majority of the time.	**Yes**	Observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning. For example, in the Earth Features Unit, students engage with a phenomenon of a fossil found in a rocky outcrop of sedimentary rocks. This provides purpose and opportunity for students to investigate how the fossil got there and how the rocks formed in Chapter 1. In Chapter 2, students have the opportunity to further build explanations of the anchoring phenomenon as they use inferences to tell what the environment may have been like long ago based on the layers of rock. In Lesson 2.4, students analyze two different rock samples from a rocky outcrop to help answer the question, "How can there be different sedimentary rock layers in the same place?" Students then use a simulation model to further investigate how different environments in the same location can cause different sediment build up. In Chapter 3, students continue to investigate the patterns found in sedimentary rocks and form explanations about how the layers form. In Lesson 3.3, students use evidence from the Class Sedimentary Rock Formation Model and from the Fossil Hunter's Handbook to make a claim about which rock layer in Hunstanton Cliff is older. Finally, in Chapter 4, students investigate how rock layers change over time and erosion affects the environment. In Lesson 4.5, students apply the concept of erosion and use their understanding about the anchoring phenomenon to make an

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			evidence-based claim to answer the question, “Why did more rock layers get exposed in Desert Rocks Canyon than in Keller’s Cannon?” In the Waves, Energy, and Information Unit, the anchoring phenomenon invites students to take on the role of marine scientists. Students are introduced to the phenomenon as they learn about a mother dolphin and her calf who get separated but are able to find one another using signals underwater. This provides purpose and opportunity for students to engage in the lessons that follow. In Chapter 1, students infer that sound is how the dolphins communicate which leads them to investigate and figure out if sound can be used to signal another underwater and if sound can travel underwater. In Lesson 1.3, students build upon this idea by learning about waves and the source of waves through a hands-on activity of making waves with a rope and a spring toy. Students apply this concept to sound waves as they use a Sound Waves Simulation in Lesson 1.4. In Chapter 3, students investigate sound waves further by using the simulation to figure out that the larger the amplitude, the louder the sound. Students also explore pitch by making and using straw reeds to discover that the wavelength of a sound is related to the pitch of the sound. Students then use what they have learned about sound and patterns of communication to write a final explanation connecting back to the anchor phenomenon of how the dolphin calf is able to hear and recognize its mother’s call. Students also have opportunities to design solutions, test theories, and make improvements to designs. In the Energy Conversions Unit, students are presented with the problem of a town experiencing frequent blackouts and are asked to make improvements to the electrical system. Students make discoveries about how electrical systems work through hands-on investigations, discussion, reading, writing, simulations, and models. Students are challenged to design improvements to the electrical system, while they

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			consider certain criteria such as cost, convenience, and impact on the environment. Students develop an understanding about electrical grids and alternate forms of energy throughout the unit. In Lesson 2.4, students write an argument introducing ways to help solve the blackout problem, such as reducing electrical use by replacing old lights with LED lights. In Chapter 3, students use an Energy Conversions Simulation and read for information then conduct hands-on investigations to discover that energy for the electrical system comes from a source, and that source energy is converted to electrical energy by a converter. In Lesson 3.4, students design, build, and test a wind turbine as a solution to the blackout problem. In Lesson 4.5, students use concepts and ideas that have been built throughout the unit to connect back to the anchoring phenomenon by presenting an argument from evidence about the best two solutions for improving the town's electric system. There is opportunity for improvement in the approach to phenomena throughout the materials. Materials often call for the teacher to visibly post a unit question prior to students' exposure to a phenomenon, and unit and chapter questions or problems are often identified for students without an explicit embedded opportunity for students to first generate these (or similar) questions and problems on their own.
Non-Negotiable (only reviewed if criteria 1 and 2 are met) **3. ALIGNMENT & ACCURACY:** Materials adequately address the Louisiana Student Standards for Science. ☒ Yes ☐ No	**REQUIRED** **3a)** The majority of the Louisiana Student Standards for Science are incorporated, to the full **depth of the standards**.	**Yes**	The majority, 93% (13 out of 14), of Louisiana Student Standards for Science for Grade 4 are addressed to the full depth of the standards. LSSS 4-ESS2-3 is not met to the full depth of the standard. The DCI, UE.ESS2E.a, "living things affect the physical characteristics of their environment," is not fully developed. Only one example could be found regarding how living things affect the physical characteristics of their environment. In the Earth's Features Unit, Lessons 4.2 and 4.3, students consider how rock can be exposed in various places and read Rocky Wonders, a book that includes a

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			possible explanation of how a cherry tree in Japan growing out of a granite boulder broke the boulder in half as it grew.
	REQUIRED **3b)** Science content is **accurate**, reflecting the most current and widely accepted explanations.	**Yes**	The majority of the content is accurate and up-to-date, reflecting the most current and widely accepted explanations.
	3c) In any one grade or course, instructional materials spend minimal time on content outside of the course, grade, or grade-band.	**Yes**	The instructional materials spend minimal time on content outside of the grade-band.
Non-Negotiable (only reviewed if criteria 1 and 2 are met) **4. DISCIPLINARY LITERACY:** Materials have students engage with authentic sources and incorporate speaking, reading, and writing to develop scientific literacy. ☒ Yes ☐ No	**REQUIRED *Indicator for grades 4-12 only** **4a)** Students regularly engage with **authentic sources** that represent the language and style that is used and produced by scientists; e.g., journal excerpts, authentic data, photographs, sections of lab reports, and media releases of current science research. Frequency of engagement with authentic sources should increase in higher grade levels and courses.	**Yes**	Students regularly engage with authentic resources that represent the language and style used and produced by scientists. The instructional materials incorporate a variety of authentic sources such as photographs, media content, graphs, and articles. For example, in the Vision and Light Unit, Lesson 1.2, students view photographs of animal's external structures such as a pig snout or cat whiskers then discuss the function and use of the structures. In Lesson 1.4, students view videos of animals and plants to discuss how internal and external structures aid in the growth of living things. Students interact with diagrams and text to gain information related to various topics. In the Energy Conversions Unit, Lesson 4.2, students read the article "Blackout" and analyze an electrical system diagram to identify the cause of the electrical difficulty. Although the article is fictional, it details a real-world problem of failing electrical systems and how to improve these systems. Students are able to gather authentic data throughout the units by the use of the simulations provided. In the Energy Conversions Simulation, students construct various devices with energy sources. They are then able to see what types of energy are transferred and analyze how much energy is transferred in and out of the device. In Chapter 1, the Earth's Features Unit, students read an informational text about a paleontologist who studies fossils to make inferences about extinct organisms. In Chapter 3,

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			students use a digital modeling tool to communicate their understanding of rock layer formation. Several photos are used throughout the unit for students to examine rock layers in order to understand how they formed and changed over time.
	REQUIRED **4b)** Students regularly engage in **speaking and writing** about scientific phenomena and engineering solutions using authentic science sources; e.g., authentic data, models, lab investigations, or journal excerpts. Materials address the necessity of using **scientific evidence** to support scientific ideas.	**Yes**	Students regularly engage in speaking and writing about scientific phenomena and engineering solutions using authentic sources. Materials address the necessity of using scientific evidence to support ideas. In a majority of chapters and throughout the units, students produce a written scientific explanation that details their understanding of the anchor and/or investigative phenomenon of the chapter or lesson. For example, in the Earth's Features Unit Lesson, 1.6 students engage in evidence circles to discuss evidence to support the claim that the Desert Rock National Park used to be underwater. Students use this evidence to write a scientific argument. In the Vision and Light Unit, Lesson 1.2, students are asked to Think-Write-Pair-Share. Students are given the question, "How do animals use their senses to get information about their environment?" Students are to write their thoughts, then share them with other students. Students are speaking and writing about science using evidence. In the Waves, Energy, and Information Unit, Lesson 3.6, students reflect on and write about how dolphins communicate using sound. This activity is in preparation for a Science Forum, where students engage in structured classroom discussion and share their ideas with one another. In Lesson 3.7, students write their final explanation of how a dolphin calf is able to hear and recognize its mother's call.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
	REQUIRED **4c)** There is **variability** in the tasks that students are required to execute. For example, students are asked to produce solutions to problems, models of phenomena, explanations of theory development, and conclusions from investigations.	**Yes**	There is variability in the tasks that students are required to execute throughout the instructional materials. Students engage in a variety of tasks including making observations; making, writing, and supporting claims; using simulations to generate ideas and analyze data; and creating models. For example, in the Energy Conversions Unit, Lesson 1.3, students create a simple electrical system and observe how energy is transferred. In Lesson 2.4, students make claims and propose solutions to the Ergstown blackout problem. In the Vision and Light Unit, Lesson 2.4, students use the Vision and Light Simulation to look at variables and to show how a predator uses light to see its prey. Students are introduced to models that show how light allows animals to see and are then asked to model how the mystery box, an activity introduced earlier in the unit, works. In the Earth's Systems Unit, Lesson 3.2, students are introduced to an analogy of a coat pile to describe how layers of rocks are older than other layers. Students then make observations of the rock layers and their Paper Pile Model. In their Fossil Hunter's Handbook, students make a claim about which rock layers are older. Students then use the Earth's Features Modeling Tool to create models of rock layers. Throughout the Waves, Energy, and Information Unit, students create and revise a sound diagram showing how sound travels through water from a mother dolphin to her calf. Students use understandings they have developed through firsthand investigations of sound travel and use of the Sound Waves Simulation to write a scientific explanation of how sound energy travels through water. Students also listen to real dolphin calls to further investigate sound pitch in order to discuss and write about how a calf knows which call belongs to its mother.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
	4d) Materials provide a coherent sequence of authentic science sources that build scientific **vocabulary** and knowledge over the course of study. Vocabulary is addressed as needed in the materials but not taught in isolation of deeper scientific learning.	**No**	Vocabulary is presented throughout the unit as needed, but students are often told definitions and do not have the opportunity to create meanings for themselves. Often, students are frontloaded definitions and then participate in an isolated vocabulary activity of writing sentences or completing multiple meaning activities. For example in the Waves, Energy, and Information Unit, Lesson 1.1, while introducing the phenomenon of how dolphins communicate the teacher states, "You will be investigating how dolphins communicate. The word communicate means to share information." The teacher posts the word on the vocabulary wall. In the same unit, students are asked to complete Word Relationships in their Investigative Notebook. Students write sentences from a list of vocabulary words to answer a question. Although the sentences they create incorporate science ideas they have been learning, this activity is taught in isolation. This same approach is used throughout the materials. Throughout the Investigation Notebook, students are guided through a Multiple Meaning Words activity in which they are introduced to words that have different meanings. The meanings or definitions of each word are provided to students in a table where they must then determine the meaning of the word used in the sentence provided. For example, as in the Energy Conversions Unit, Lesson 2.2, where students differentiate between multiple meanings of the words run, form, cool, and plant.
SECTION II: ADDITIONAL INDICATORS OF QUALITY			
Additional Criterion **5. LEARNING PROGRESSIONS:** The materials adequately address Appendix A: Learning Progressions. They are coherent and provide natural connections to other performance expectations	**REQUIRED** **5a)** The overall organization of the materials and the development of disciplinary core ideas, science and engineering practices, and crosscutting concepts are coherent within and across units. The **progression of learning** is coordinated over time, clear and organized to prevent student misunderstanding and supports student	**Yes**	The lessons within and across each unit are organized to support learning through a natural progression. Students engage with and build an understanding of the three dimensions of the standards at increasing levels of complexity and sophistication and engage in a coherent progression of learning that is coordinated over time, clear, and organized. For example, in the Earth's Features Unit, the Crosscutting Concept of Cause and Effect is

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
including science and engineering practices, crosscutting concepts, and disciplinary core ideas; the content complements the the Louisiana Student Standards for Math. ☒ Yes ☐ No	mastery of the performance expectations.		presented in Lesson 1.3 as part of the discussion on how fossils form. In Lesson 2.2, students read about conglomerate rocks and sandstone and determine the causes that makes the rocks different. In Lesson 2.5, the teacher discusses the causes and effects of different environments and the rocks that form there while preparing to write an explanation of the fossil found within the desert rocks. In the Vision and Light Unit, the Science and Engineering Practice of Asking Questions is presented in Lesson 1.3 where students are to ask questions and obtain information. The teacher models how to ask questions while reading. After reading the first paragraph the teacher states, "This makes me wonder: Do other animals have the same five senses that we have? Do they have the senses of hearing, smell, touch, taste, and vision?" Students are to read with partners and ask questions about what they are reading. Students continue to ask questions in the next chapter to gain information about vision and light. At the end of the unit, in Lesson 5.1, students are to decide on their own investigation question, write out the steps needed in their investigation, and predict the results.
	5b) Students apply mathematical thinking when applicable. They are not introduced to math skills that are beyond the applicable grade's expectations in the Louisiana Student Standards for Mathematics. Preferably, **math connections** are made explicit through clear references to the math standards, specifically in teacher materials.	**Yes**	Students apply mathematical thinking when applicable. The LSSS for Grade 4 do not specifically address SEP, "Using mathematics and computational thinking." However, there is some evidence of students using mathematical thinking when needed. For example, in Lesson 2.1 of the Energy Conversions Unit, students transfer a certain number of units of energy from an energy source to a device and then analyze the data generated on a bar graph after the simulation is ran. In Lesson 3.2 of the Waves, Energy, and Information Unit, students create straw reeds and then shorten them by measuring and cutting 3 cm off each end of the straw.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
Additional Criterion **6. SCAFFOLDING AND SUPPORT:** Materials provide teachers with guidance to build their own knowledge and to give all students extensive opportunities and support to explore key concepts using multiple, varied experiences to build scientific thinking. ☒ Yes ☐ No	**REQUIRED** **6a)** There are separate **teacher support** materials including: scientific background knowledge, support in three-dimensional learning, learning progressions, common student misconceptions and suggestions to address them, guidance targeting speaking and writing in the science classroom (i.e. conversation guides, sample scripts, rubrics, exemplar student responses).	**Yes**	There are separate teacher support materials provided. Support materials within each lesson include scientific background knowledge, support in three-dimensional learning, learning progressions, common student misconceptions and suggestions to address them, guidance targeting speaking, and writing in the science classroom. Each unit provides resources used for planning the unit. The Unit Overview describes what students should figure out, why they should figure it out, and how they figure it out by the end of the unit. The Unit Map describes what students figure out and how for each Chapter. The Progression Build describes how the phenomena builds on the learning throughout each unit. The Materials and Preparations section provides information on what materials are needed for each activity and how the teacher needs to prepare for each of these activities. The Science Background section provides background information about the DCIs, SEPs, and CCCs addressed in the unit. The Standards at a Glance section lists the Student Standards for Science, ELA, and Math addressed in the unit. A Teacher Reference Section includes Lesson Overview Compilation, Standards and Goals, 3-D Statements, Assessment System, Embedded Formative Assessments, Books in This Unit, Apps in this Unit, and Flextensions in This Unit. Each lesson provides an Overview, Differentiation strategies, Materials and Preparation, and Standards specific to that lesson. Each unit includes a Teacher's Guide with all of the above components along with other resources to help the teacher prepare for and teach each unit.
	6b) Appropriate suggestions and materials are provided for **differentiated instruction** supporting varying student needs at the unit and lesson level (e.g., alternative teaching approaches, pacing, instructional delivery options, suggestions for addressing common student difficulties to meet standards, etc.).	**Yes**	Appropriate suggestions and materials are provided for differentiated instruction to support varying student needs at the unit and lesson level. Each lesson includes a section titled Differentiated Instruction. Within this section suggestions are given for students struggling, English Learners, and those who need an extension.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			In the Energy Conservation Unit, Lesson 3.4, differentiation strategies for students "who need more challenge" suggests that students read from It's All Energy and consider how energy is transferred. Students are then to draw a diagram of this energy transfer. In the same lesson there are suggestions for teachers with Diverse Learners that advises them to show the physical materials to students as they design a wind turbine. In the Earth's Features Unit, Lesson 3.2, differentiation strategies are suggested for "students who need more support" through additional modeling of searching for and writing down evidence in Activity 2. Teachers are advised to think aloud as they decide which evidence to draw from the text and when summarizing the evidence when writing.
Additional Criterion **7. USABILITY:** Materials are easily accessible, promote safety in the science classroom, and are viable for implementation given the length of a school year. ☒ Yes ☐ No	**REQUIRED** **7a)** Text sets (when applicable), laboratory, and other scientific materials are **readily accessible** through vendor packaging.	**Yes**	Text sets, laboratory, and other scientific materials are readily accessible through vendor packaging. Students have access to student apps and text through the digital platform. Each unit contains an Investigation Notebook which contains needed materials for the unit. Each unit incorporates reference books into the lesson which are accessible as eBooks. The packaged kits are also available for purchase.
	7b) Materials help students build an understanding of standard operating procedures in a science laboratory and include **safety** guidelines, procedures, and equipment. Science classroom and laboratory safety guidelines are embedded in the curriculum.	**Yes**	Materials help students build an understanding of standard operating procedures in a science laboratory and include safety guidelines, procedures, and equipment. Science classroom and laboratory safety guidelines are embedded in the curriculum. For example, within the Investigation Notebook for each unit, safety guidelines are addressed on page 1. Safety notes such as "Don't taste things" are given. Additional safety notes are located within the lessons, as needed. For example, in the Energy Conversions Unit, Lesson 1.3, safety considerations given prior to building an electrical system states, "Ensure that students do not clip the alligator clips to their skin."
	7c) The total amount of content is **viable** for a school year.	**Yes**	The total amount of content is viable for a school year. The instructional materials contain four units

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			with twenty-two lessons each. Each lesson contains sixty minutes of instructional time.
Additional Criterion **8. ASSESSMENT:** Materials offer assessment opportunities that genuinely measure progress and elicit direct, observable evidence of the degree to which students can independently demonstrate the assessed standards. ☒ Yes ☐ No	**REQUIRED** **8a) Multiple types** of formative and summative assessments (performance-based tasks, questions, research, investigations, and projects) are embedded into content materials and assess the learning targets.	**Yes**	Multiple types of formative and summative assessments are embedded and assess the learning targets. Formative assessments such as pre-unit assessments, On-The-Fly assessments, self-assessments, and critical juncture writing assessments are included in each unit. End-of-Unit Assessments and rubrics are also provided. For example, in the Vision and Light Unit, Lesson 1.4, students complete a Critical Juncture Assessment writing about how animals use their senses. In Lesson 2.5, students complete another Critical Juncture Assessment writing about how light allows animals to see. These formative assessments build to the summative assessment such as in Lesson 4.6, where students write a final explanation about why more light at night makes it harder for the Tokay gecko to see. In the Earth's Features Unit, there are two End of Unit Assessments available to assess student knowledge of the standards. In the Lesson 3.5, End-of-Unit Assessment, students develop arguments about the anchor phenomena introduced at the beginning of the unit in response to two questions. In Lesson 4.5, End-of-Unit Assessment, students must respond using scientific evidence.
	REQUIRED **8b)** Assessment items and tasks are structured on integration of the **three-dimensions**.	**Yes**	Assessment items and tasks are structured on the integration of the three-dimensions. In the Waves, Energy, and Information Unit, Lesson 3.7, the summative assessment provides opportunities for students to assess their knowledge of the three dimensions. On the Scientific Explanation of How Dolphins Communicate sheet, students are asked to look at Models (Developing and Using Models, SEP) of wavelengths and answer questions about the Patterns (CCC) of the wavelengths that were produced by a mother dolphin and its calf in water. This also addresses the DCI UE.PS4A.a. In the Energy Conversions Unit, Lesson 4.1, students read about Systems (CCC) to better understand how systems might fail and then build a simple electrical system to serve as a Model (SEP) while investigating energy

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			(DCI,UE.PS3Bc) and the causes of system failures. Students identify the cause of failure of the other team's System (CCC) and then make a prediction about whether or not a particular Solution (SEP) will make a system function properly. During this activity, the teacher circulates to assess student understanding of how systems can fail as it relates to energy transfer (DCI, UE.PS3Bc) using an On-The-Fly Assessment. In the Earth's Features Unit, Lesson 2.4, students use the Rock Layers Simulator to construct an explanation of how the area has changed over time. This formative assessment, which is provided in the Student Investigation Notebook, addresses the SEP, Constructing Explanations and Designing Solutions, the DCI, UE.ESS1.C.a, and the CCC, Patterns.
	8c) Scoring guidelines and rubrics **align** to performance expectations, and incorporate criteria that are specific, observable, and measurable.	**Yes**	Scoring guidelines and rubrics align to performance expectations and incorporate criteria that are specific, observable, and measurable. Student Look Fors and Possible Student Responses are given to guide teachers in their assessment of student understanding. In the Waves, Energy, and Information Unit, Lesson 3.1, students use the simulation to investigate amplitude and how changes in amplitude are connected to the wave. Under the teacher support tab, possible student responses and Look Fors are given. In Lesson 3.7, students write the final their explanations answering the unit question. An Assessment Guide is included with three different rubrics assessing the CCC, DCIs, and SEPs within the unit.

FINAL EVALUATION

Tier 1 ratings receive a "Yes" in Column 1 for Criteria 1 – 8.

Tier 2 ratings receive a "Yes" in Column 1 for all non-negotiable criteria, but at least one "No" in Column 1 for the remaining criteria.

Tier 3 ratings receive a "No" in Column 1 for at least one of the non-negotiable criteria.

Compile the results for Sections I and II to make a final decision for the material under review.

Section	Criteria	Yes/No	Final Justification/Comments
I: Non-Negotiables	1. Three-dimensional Learning	**Yes**	The materials are designed so that students develop scientific content knowledge and scientific skills through interacting with the three dimensions of the

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			science standards. The majority of the materials integrate the Science and Engineering Practices, Crosscutting Concepts, and Disciplinary Core Ideas to support deeper learning.
	2. Phenomenon-Based Instruction	**Yes**	Observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning a majority of the time.
	3. Alignment & Accuracy	**Yes**	The majority, 93%, of the Louisiana Students Standards for Science in Grade 4 are incorporated into the full depth of the standards. The content is accurate and up to date reflecting the most current and widely accepted explanations. Minimal time is spent on content outside the grade band.
	4. Disciplinary Literacy	**Yes**	Students have multiple opportunities to engage with authentic resources and are encouraged to speak and write about scientific phenomenon and engineering solutions with an emphasis on using scientific data to support scientific ideas.
II: Additional Indicators of Quality	5. Learning Progressions	**Yes**	The overall organization of the materials supports student mastery of the standards. The progression of learning for the Disciplinary Core Ideas are coherent and organized to ensure student mastery.
	6. Scaffolding and Support	**Yes**	There are separate teacher support materials and appropriate suggestions for multiple types of learners within the materials.
	7. Usability	**Yes**	Text sets, laboratory, and other scientific materials are readily accessible through vendor packaging. Safety notes and guidelines are embedded within the curriculum and a viable amount of material is provided to be completed within the school year.
	8. Assessment	**Yes**	Formative and summative assessments that assess the learning targets are included within the curriculum. Assessment tasks are structured on integration of the three-dimensions and scoring guidelines align to performance expectations.
FINAL DECISION FOR THIS MATERIAL: **Tier I, Exemplifies quality**			

Strong science instruction requires that students:

- Apply content knowledge to explain real world phenomena and to design solutions,
- Investigate, evaluate, and reason scientifically, and
- Connect ideas across disciplines.

Title: **Amplify Science** Grade/Course: **5**

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Overall Rating: **Tier I, Exemplifies quality**

Tier I, Tier II, Tier III Elements of this review:

STRONG	WEAK
1. Three-dimensional Learning (Non-negotiable)	
2. Phenomenon-Based Instruction (Non-negotiable)	
3. Alignment & Accuracy (Non-negotiable)	
4. Disciplinary Literacy (Non-negotiable)	
5. Learning Progressions	
6. Scaffolding and Support	
7. Usability	
8. Assessment	

To evaluate instructional materials for alignment with the standards and determine tiered rating, begin with **Section I: Non-negotiable Criteria**.

- Review the **required**[1] Indicators of Superior Quality for each **Non-negotiable** criterion.
- If there is a "Yes" for all **required** Indicators of Superior Quality, materials receive a "Yes" for that **Non-negotiable** criterion.
- If there is a "No" for any of the **required** Indicators of Superior Quality, materials receive a "No" for that **Non-negotiable** criterion.
- Materials must meet **Non-negotiable** Criteria 1 and 2 for the review to continue to **Non-negotiable** Criteria 3 and 4. Materials must meet all of the **Non-negotiable** Criteria 1-4 in order for the review to continue to Section II.
- If materials receive a "No" for any **Non-negotiable** criterion, a rating of Tier 3 is assigned and the review does not continue.

If all Non-negotiable Criteria are met, then continue to **Section II: Additional Criteria of Superior Quality.**

- Review the **required** Indicators of Superior Quality for each criterion.
- If there is a "Yes" for all **required** Indicators of Superior Quality, then the materials receive a "Yes" for the additional criteria.
- If there is a "No" for any **required** Indicator of Superior Quality, then the materials receive a "No" for the additional criteria.

Tier 1 ratings receive a "Yes" for all Non-negotiable Criteria and a "Yes" for each of the Additional Criteria of Superior Quality.
Tier 2 ratings receive a "Yes" for all Non-negotiable Criteria, but at least one "No" for the Additional Criteria of Superior Quality.
Tier 3 ratings receive a "No" for at least one of the Non-negotiable Criteria.

[1] **Required Indicators of Superior Quality** are labeled "**Required**" and shaded yellow. Remaining indicators that are shaded white are included to provide additional information to aid in material selection and do not affect tiered rating.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
Non-negotiable **1. THREE-DIMENSIONAL LEARNING:** Students have multiple opportunities throughout each unit to develop an understanding and demonstrate application of the three dimensions. ☒ Yes ☐ No	**Required** **1a)** Materials are designed so that students develop scientific content knowledge and scientific skills through interacting with the three dimensions of the science standards. The majority of the materials teach the science and engineering practices, crosscutting concepts and disciplinary core ideas separately when necessary but they are most often integrated to support deeper learning.	**Yes**	Materials are designed so that students develop specific content knowledge and scientific skills through interacting with the three dimensions of the science standards. The majority of materials integrate the Science and Engineering Practices (SEP), Crosscutting Concepts (CCC), and Disciplinary Core Ideas (DCI) to support deeper learning. For example, in the Modeling Matter Unit, Lesson 1.5, students engage with a fan model (SEP, Developing and Using Models) while representing molecules and the differing properties that they might have. Students observe foam peanuts, rocks, ball res, and pieces of Velcro as a fan blows to observe the varying properties and attractions of molecules (DCI UE.PS1A.a). Students observe this model using “nano vision goggles”(a visual representation strategy used throughout the text) to understand that this model represents items too small to be seen. This strategy allows students to build an understanding of the concept of Scale, Proportion and Quantity (CCC) at the lesson and chapter level. Another example of three-dimensional learning can be found in the Ecosystem Restoration Unit. In Lesson 1.5, students use a simulation model to begin to understand and explain the phenomenon of failing ecosystems (SEP, Developing and Using Models). The simulation models help students visualize how animals use food molecules to provide them with the materials they need for growth, energy, and motion (DCI UE.LS1C.a). Throughout this lesson and unit, students discover that energy in animals’ food was once energy from the sun (DCI UE.PS3D.b) and are able to describe the various ways in which that energy could have been transferred between organisms in an ecosystem (CCC, Energy and Matter). In The Earth’s Systems Unit, Lesson 2.7, students design a fresh water collection system (SEP,

			Developing and Using Models) that will collect freshwater from saltwater. In groups, students decide which parts they will include for their collection system, keeping in mind the specific purpose for each part (CCC, Systems and System Models). Students develop and test their design to collect fresh water from salt water by creating a system that condenses water vapor into liquid vapor. As students progress to the next chapter, to test the success of their designs, they discuss whether or not their designs met the criteria and why and then use this information to improve their systems (DCI ETS.UE.1B.c).
Non-negotiable **2. PHENOMENON-BASED INSTRUCTION:** Explaining phenomenon and designing solutions drive student learning. ☒ Yes ☐ No	**Required** **2a)** Observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning a majority of the time.	**Yes**	Observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning a majority of the time. For example, in the Patterns of Earth and Sky Unit, students are asked to figure out and explain the illustrations on a fictional artifact that depicts the sky looking differently at different times. This serves as the anchor phenomenon for the unit. In Chapter 1, students investigate why we don't see stars during the day through a series of lessons that include digital simulations of stars and classroom models using students and scaled measurements. Students discuss the brightness of stars and compare this idea to the headlights of a car at night. In Chapter 2, students investigate why the sun is visible during the day and not at night. Chapter 3 focuses on the patterns of various stars throughout the year and the patterns that we observe from Earth. Chapter 4 connects the evidence that students have gathered from investigations, reading simulations and models to create an explanation of the anchor phenomenon in a piece of writing. In the Ecosystem Restoration Unit, students are asked to investigate why "[t]he jaguars, sloths, and cecropia trees in a reforested section of a Costa Rican rainforest are not growing and thriving." This serves as the anchor phenomenon for the unit. During the unit, students investigate and explain what these three organisms need to survive in a Costa Rican rainforest. The investigative phenomena throughout the unit support and build students' understanding of the anchor phenomena through

			investigative reading, analyzing data, writing arguments, making recommendations for improvement, creating and using models, using simulations, and completing hands-on investigations. In Lesson 2.1, students investigate why "plants grow and thrive differently in different terrariums." Students build on key understandings they have developed thus far that are related to the anchor phenomenon to explain how jaguars and sloths are not thriving because there is a lack of producers. Students continue to investigate and explain the needs of producers to understand what they need to survive and the importance of decomposers within an ecosystem. At the end of the unit, students connect back to the anchor phenomenon as they Construct Arguments from Evidence (SEP) to explain the phenomenon and to articulate ideas on how to address the problem. In the Earth System Unit, the anchor phenomenon challenges students to take on the role of water resource engineers who are charged to investigate why East Ferris, a city on one side of the fictional Ferris Island, is prone to water shortages while a city on the other side of the island is not. While the physical existence of the location is fictional, water scarcity is a current environmental concern, so students are able to build an understanding of how to generate solutions to help protect the Earth's resources. This provides purpose and opportunity for students to engage in the learning that follows. For example, in Lesson 1.2 students engage in Obtaining, Evaluating, and Communicating Information (SEP) as they explore a text about water shortages and water solutions. Throughout the unit, additional supporting phenomena are presented, which also serve to provide the purpose and opportunity for student learning. Students engage in learning experiences that will ultimately help them to explain the anchor phenomenon as they seek to answer questions such as, "Why does more rain form over West Ferris than East Ferris?" and "Why is more water vapor getting cold over West Ferris than East Ferris." For example, in Lesson 4.2, students use a simulation model to investigate how water vapor gets to different areas in the

			atmosphere. Students observe the movement of water vapor on different landscapes, discuss factors that may change the movement of water vapor, and then analyze one molecule of water vapor to observe its movements more closely. Students then create a model to further investigate how wind can affect the movement of water vapor, which then provides an opportunity for students to put more pieces of the puzzle together to then explore how wind and mountains can affect uneven rainfall patterns. The unit ends with students developing a freshwater collection system and discussing solutions to wastewater treatment. There is an opportunity for improvement in the approach to phenomena throughout the materials. For example, the materials often call for the teacher to visibly post a unit question prior to student exposure to a phenomenon, and often, unit and chapter questions or problems are identified for students. An embedded opportunity should be provided for students to first generate these (or similar) questions and problems on their own.
Non-negotiable (only reviewed if Criteria 1 and 2 are met) **3. ALIGNMENT & ACCURACY:** Materials adequately address the Louisiana Student Standards for Science. ☒ Yes ☐ No	**Required** **3a)** The majority of the Louisiana Student Standards for Science are incorporated, to the full **depth of the standards**.	**Yes**	100% (13 out of 13) Louisiana Students Standards for Science for Grade 5 are addressed to the full depth of the standards.
	Required **3b)** Science content is **accurate**, reflecting the most current and widely accepted explanations.	**Yes**	The majority of the content is accurate and up-to-date, reflecting the most current and widely accepted explanations.
	3c) In any one grade or course, instructional materials spend minimal time on content outside of the course, grade, or grade-band.	**Yes**	The instructional materials spend minimal time on content outside of the grade-band.
Non-negotiable (only reviewed if Criteria 1 and 2 are met) **4. DISCIPLINARY LITERACY:** Materials have students engage with authentic sources and incorporate speaking, reading, and writing to develop scientific	**Required *Indicator for grades 4-12 only** **4a)** Students regularly engage with **authentic sources** that represent the language and style that is used and produced by scientists; e.g., journal excerpts, authentic data, photographs, sections of lab reports, and media releases of current science research. Frequency of engagement with authentic sources should increase in higher grade levels and courses.	**Yes**	Students regularly engage with authentic sources that represent the language and style used and produced by scientists. The instructional materials incorporate a variety of authentic sources including science simulations, photographs, media content, graphs, and articles. Students engage with authentic sources, similar to scientists, through the nonfiction readings that come into play throughout the units. For example, in the Patterns of Earth and Sky Unit, students read Star Scientist, which also provides

literacy. ☒ Yes ☐ No			students with opportunities to see photographs taken from space telescopes (pg. 6), see engineers working on a real-life space telescope to send into space (pg. 8), and to see graphs created from data sent to Earth by telescopes (pg. 11). Students interact with graphs and text to gain information related to various topics. In the Earth System Unit, Lesson 1.1, students read the Water Encyclopedia and analyze a graph that depicts amounts of water on Earth. In Lesson 1.2, students analyze a graph that depicts the population in East Ferris and then discuss how the water needs change depending on population growth. The materials include authentic photographs and simulations. For example, in the Modeling Matter Unit, Lesson 3.5, students observe a photograph of oil, vinegar and an emulsifier. Students discuss the photograph and infer ideas about the attraction of the ingredients. Within the same lesson, students use a simulation to model how the emulsifier affects the molecules at a nanoscale level. In addition, students also are exposed to simulations that serve as models for events that would not otherwise be observable in a Grade 5 classroom. In Chapter 4, Lesson 1 of the Earth Systems Unit, students grapple with understanding how water vapor moves in the atmosphere. During the simulation, students have to choose from various types of landforms and use the data they collect about water vapor to make inferences on why there is more rainfall on one side of the fictional Ferris Island than the other side.
	Required **4b)** Students regularly engage in **speaking and writing** about scientific phenomena and engineering solutions using authentic science sources; e.g., authentic data, models, lab investigations, or journal excerpts. Materials address the necessity of using **scientific evidence** to support scientific ideas.	**Yes**	Students regularly engage in speaking and writing about scientific phenomena and engineering solutions using authentic sources. Materials address the necessity of using scientific evidence to support ideas. In a majority of chapters and throughout the units, students produce a written scientific explanation that details their understanding of the anchor and/or investigative phenomenon of the chapter or lesson. For example, in the Modeling Matter Unit, Lesson 1.10, students craft a written explanation of "[w]hy food coloring separated into dyes." Students learn about the characteristics that embody a strong scientific explanation (specifically including data) and even have an opportunity to

			revise their explanation after sharing and discussing it with peers. In the Ecosystem Restoration Unit, Lesson 1.4, students engage in discussing and writing a scientific argument based on evidence to answer the question "[h]ow do animals grow?" Students first work with a partner and then whole group to develop a claim with evidence after watching a video about otters. Within the same unit, in Lesson 1.8, 2.7 and 3.6, students engage in a discussion using a structure called "evidence circles" to discuss evidence and thoughts prior to working on a restoration plan.
	Required **4c)** There is **variability** in the tasks that students are required to execute. For example, students are asked to produce solutions to problems, models of phenomena, explanations of theory development, and conclusions from investigations.	**Yes**	There is variability in the tasks that students are required to execute throughout the instructional materials. Students engage in a variety of tasks including making observations; making, writing, and supporting claims; using simulations to generate ideas and analyze data; and creating models. Students make models of phenomena at various points in the units. For example, in the Modeling Matter Unit, Lesson 3.6, students make a digital model of what they think a mixture of oil and vinegar would look like after lecithin is added. Students then evaluate peers' models and make improvements to their own based on the feedback given to them by their peers. In the Modeling Matter Unit, Lesson 2.2, students observe a simulation of molecules dissolving and generate questions to investigate. In Lesson 2.4, students draw a model of the molecules and write explanations. In the Ecosystem Restoration Unit, Lesson 3.1, students look at weather data to determine why the cecropia trees are not thriving. Then they look at two different soil samples and draw a conclusion to determine what is in each soil sample and if it affects the growth of trees. Students take this information and make observations of the terrariums they built earlier in the unit. Students then determine if the living organisms in their terrarium are growing and thriving. Students take the information they have gathered from this unit to make conclusions from investigations.

	4d) Materials provide a coherent sequence of authentic science sources that build scientific **vocabulary** and knowledge over the course of study. Vocabulary is addressed as needed in the materials but not taught in isolation of deeper scientific learning.	**No**	Vocabulary is presented throughout the unit as needed, but students are often told definitions and do not have the opportunity to create meanings for themselves. Often, students are frontloaded definitions and then participate in an isolated vocabulary activity of writing sentences or completing multiple meaning activities. For example in the Patterns of Earth and Sky Unit, Lesson 1.1, while introducing the artifact, the teacher tells students that they will act as an astronomer and then provides the definition, "An astronomer is a scientist who studies stars, planets, and other objects in the universe, but not Earth." The teacher posts the word on the vocabulary wall. Later in the chapter, (Lesson 1.6) students are presented with vocabulary from the vocabulary wall and asked to make sentences with the words. Although the sentences they create incorporate science ideas they have been learning, this activity is taught in isolation. This same approach is used throughout the materials. In the Modeling Matter Unit, Lesson 1.2, the teacher introduces the term "observe" and then provides the definition and uses the same approach for the term "properties." A vocabulary wall is used to reference the terms, and students are encouraged to use them during their investigations. Throughout the Investigation Notebook, students are guided through a Multiple Meaning Words activity in which students are introduced to words that have different meanings. The meanings or definitions of each word are provided to the students in a table. The students then determine which meaning the word has in the sentence provided. In The Earth System's Unit, students complete Word Relationships in their Investigative Notebook. Students write sentences from a list of vocabulary words to answer a question. This is done again in the Patterns of Earth and Sky Unit in the Investigative Notebook. Students answer a question in the Word Relationship activity to answer a question about patterns in the sky using specific vocabulary words.
Section II: Additional Criteria of Superior Quality			

5. LEARNING PROGRESSIONS: The materials adequately address Appendix A: Learning Progressions. They are coherent and provide natural connections to other performance expectations including science and engineering practices, crosscutting concepts, and disciplinary core ideas; the content complements the the Louisiana Student Standards for Math. ☒ Yes ☐ No	**Required** **5a)** The overall organization of the materials and the development of disciplinary core ideas, science and engineering practices, and crosscutting concepts are coherent within and across units. The **progression of learning** is coordinated over time, clear and organized to prevent student misunderstanding and supports student mastery of the performance expectations.	**Yes**	The lessons within and across each unit are organized to support learning through a natural progression. Students engage with and build an understanding of the three dimensions of the standards at increasing levels of complexity and sophistication, and engage in a coherent progression of learning that is coordinated over time, clear, and organized. Within the first unit, Patterns of Earth and Sky, students progress toward Performance Expectations through various experiences. Students begin the unit by developing the understanding that the sun looks bigger and brighter than all of the other stars because it is much closer to Earth. Next, the students learn that the sky changes throughout the day because the Earth spins, leading up to the concept that the stars they see in the night sky change throughout the year because the Earth orbits the sun. This learning progression builds to and supports the anchor phenomenon of an observed artifact that depicts the sky differently during different times. The students develop 3D learning through observing and investigating patterns in the day and night sky with various simulated models, and informational text. Through these activities, students develop a sense of scale and proportion of the Earth, sun, stars, and discover patterns of the stars. Across units, students build an understanding of three-dimensional learning as elements of 3D learning are first introduced and then built upon with complexity as students move through the units. Students begin focusing on Cause and Effect (CCC) relationships that help build an understanding of yearly Patterns (CCC) observed in the night sky. They begin to utilize simulation Models (SEP) to Investigate (SEP) these connections and gather evidence to make claims and support their ideas (SEP, Engage in Argument with Evidence) about the stars. As the students move onto the next unit, Modeling Matter, students build off their initial ideas about Scale and Proportion (CCC) on a large scale to understanding it on a much smaller scale when learning about the properties of matter at the nanoscale versus the observable scale learned in the prior unit. Students move from simulated Models

			(SEP) to hands on Investigations (SEP) when learning about substances and matter. As students move to the Earth System, they build an even deeper understanding of the properties of matter and chemical reactions, and then move onto Earth system interactions, water distribution, and the impacts that humans have on the environment, while utilizing Math Computational Skills (SEP) and developing an understanding of Systems and System Models (CCC). Finally, in the Ecosystem Restoration Unit, students build on the concept of human impact on the environment, as well as the movement of matter and energy. This leads to Engaging in Argument from Evidence (SEP) in order to figure out why an ecosystem is failing and how to stop it by Designing a Solution (SEP) to the problem.
	5b) Students apply mathematical thinking when applicable. They are not introduced to math skills that are beyond the applicable grade's expectations in the Louisiana Student Standards for Mathematics. Preferably, **math connections** are made explicit through clear references to the math standards, specifically in teacher materials.	**Yes**	Students apply mathematical thinking when applicable. When utilizing the Scale Tool Simulation used in multiple units, students see the "relative differences in size and scale of a wide variety of objects ranging from the solar system to subatomic particles." In the Ecosystem Restoration Unit, Lesson 1.3, the tool measures items by using the powers of 10 and allows students to observe size and scale in this way as they scroll through the tool. In the Earth Systems Unit, students observe and analyze data that helps generate ideas for creating a freshwater collection system. Students also measure their results in their system which helps students improve their design. In the Modeling Matter Unit, students measure various substances as they engage in hands on investigations that help students understand different properties of matter. Students also use mathematical skills when considered total mass of a mixture remains the same even when one substance dissolves.
6. SCAFFOLDING AND SUPPORT: Materials provide teachers with guidance to build their own knowledge and to give all students extensive opportunities and support to explore key concepts using multiple, varied experiences to build scientific thinking.	**Required** **6a)** There are separate **teacher support** materials including: scientific background knowledge, support in three-dimensional learning, learning progressions, common student misconceptions and suggestions to address them, guidance targeting speaking and writing in the science classroom (e.g. conversation guides, sample scripts, rubrics, exemplar student responses).	**Yes**	There are separate teacher support materials provided. Support materials within each lesson include scientific background knowledge, support in three-dimensional learning, learning progressions, common student misconceptions and suggestions to address them, guidance targeting speaking, and writing in the science classroom. Each unit provides resources for planning the unit. The Unit Overview describes what students should figure out, why they should figure it out, and how they figure it out by

☒ Yes ☐ No			the end of the unit. The Unit Map describes what students figure out and how for each Chapter. The Progression Build describes how the phenomena build on the learning throughout each unit. The Materials and Preparations section provides information on what materials are needed for each activity and how the teacher needs to prepare for each of these activities. The Science Background section provides background information about the DCIs, SEPs, and CCCs addressed in the unit. The Standards at a Glance section lists the Student Standards for Science, ELA, and Math addressed in the unit. A Teacher Reference Section includes Lesson Overview Compilation, Standards and Goals, 3-D Statements, Assessment System, Embedded Formative Assessments, Books in This Unit, Apps in This Unit, and Flextensions in This Unit. Each lesson provides an Overview, Differentiation strategies, Materials and Preparation, and Standards specific to that lesson. Each unit includes a Teacher's Guide with all of the above components, along with other resources to help the teacher prepare for and teach each unit.
	6b) Appropriate suggestions and materials are provided for **differentiated instruction** supporting varying student needs at the unit and lesson level (e.g., alternative teaching approaches, pacing, instructional delivery options, suggestions for addressing common student difficulties to meet standards, etc.).	**Yes**	Appropriate suggestions and materials are provided for differentiated instruction to support varying student needs at the unit and lesson level. Each lesson includes a section titled Differentiated Instruction. Within this section, suggestions are given for students struggling, English Learners, and those who need an extension. In the Ecosystems Restoration Unit, Lesson 1.2, differentiation strategies for Visual Representation are recommended suggesting that "the Rainforest Problem Slideshow provides a highly visual and engaging introduction to the problem that students will be working to solve throughout the unit." A multimodal instructional approach is used in the unit to provide students with "many opportunities to make sense of concepts and provides access points for different types of learners." The materials also provide a suggestion for teachers to work with a small group of students who need support in observing the illustrations of the three different ecosystems in their notebook for Activity 3.

			Suggestions for students that need a challenge are also provided. This gives the suggestion for students to go back and record how ecosystems in Activity 3 are similar and different.
7. USABILITY: Materials are easily accessible, promote safety in the science classroom, and are viable for implementation given the length of a school year. ☒ Yes ☐ No	**Required** **7a)** Text sets (when applicable), laboratory, and other scientific materials are **readily accessible** through vendor packaging.	**Yes**	Text sets, laboratory, and other scientific materials are readily accessible through vendor packaging. Students have access to student apps and text through the digital platform. Each unit contains an Investigation Notebook which contains needed materials for the unit. Each unit incorporates reference books into the lesson which are accessible as eBooks. The packaged kits are also available for purchase.
	Required **7b)** Materials help students build an understanding of standard operating procedures in a science laboratory and include **safety** guidelines, procedures, and equipment. Science classroom and laboratory safety guidelines are embedded in the curriculum.	**Yes**	Materials help students build an understanding of standard operating procedures in a science laboratory and include safety guidelines, procedures, and equipment. Science classroom and laboratory safety guidelines are embedded in the curriculum. For example, within the Investigation Notebook for each unit, safety guidelines are addressed on page 1. Safety notes such as "Don't taste things" are given. Additional safety notes are located within the lessons, as needed. For example, in the Earth System Unit, Lesson 2.7, prior to building fresh water systems, a safety note is included to remind students to be careful using the clear wrap box due to the sharp cutting edge. Each lesson provides a materials list and instructions or suggestions for preparing these materials for each lesson.
	7c) The total amount of content is **viable** for a school year.	**Yes**	The total amount of content is viable for a school year. The instructional materials contain four units with twenty-two to twenty-six lessons each. Each lesson contains sixty minutes of instructional time.
8. ASSESSMENT: Materials offer assessment opportunities that genuinely measure progress and elicit direct, observable evidence of the degree to which students can independently demonstrate the assessed standards.	**Required** **8a) Multiple types** of formative and summative assessments (performance-based tasks, questions, research, investigations, and projects) are embedded into content materials and assess the learning targets.	**Yes**	Multiple types of formative and summative assessments are embedded and assess the learning targets. Formative assessments such as pre-unit assessments, On-The-Fly assessments, self-assessments, and critical juncture writing assessments are included in each unit. End-of-Unit Assessments and rubrics are also provided. For example, in the Ecosystem Restoration Unit, Lesson 1.1, students write about problems that may exist within the ecosystem. In Lesson 1.3, students synthesize ideas after reading and discussing a text to answer the question "How do animals grow?"

☒ Yes ☐ No			These formative assessments build to the summative assessment at the end of the unit in Lesson 3.7 where students complete a food web diagram and complete an argument answering the question, “Why aren't snakes growing and thriving in the forest Ecosystem?” In the Patterns of the Sky Unit, two End-of-Unit Assessments are available to assess student mastery of the standards. The first End-of-Unit Assessment, in Lesson 3.6, asks students questions that are based on the anchor phenomena introduced at the beginning of the unit. Students are also asked how the pull of gravity affects people in different parts of the earth. On the second End-of-Unit Assessment, in Lesson 4.3, students finish designing and investigating a question they have posed which is based on scientific evidence acquired throughout the unit. The summative assessments have minimal questions and do not assess all the learning targets taught within the units. For example, the End-of-Unit Writing, in Patterns of Earth and Sky, includes 4 parts with a total of 8 questions, with LSSM 5-ESS1-2 not assessed to the full depth of the standard.
	Required **8b)** Assessment items and tasks are structured on integration of the **three-dimensions**.	**Yes**	Assessments items and tasks are structured on the integration of the three-dimensions. In the Patterns of the Sky Unit, Lesson 3.6, the summative assessment provides opportunities for students to assess their knowledge of the three dimensions. In the End-of-Unit Writing, Explaining the Artifact, Part 3, Question 1, states, “Why does the nighttime section of the artifact show other stars in the sky, but not the sun?” Within the questions, students are assessed on the SEP, Analyzing and Interpreting Data, as they are called to analyze the pictures of an artifact first introduced as the anchor phenomenon to answer the question provided. The End-of-Unit Writing assesses the student’s knowledge of the DCI (UE.ESS1B.a) as well as the student’s understanding of observable patterns (CCC) that occur because of how the Earth orbits around the sun. Furthermore, the CCC, Patterns, is addressed through the observable pattern of the day and night sky. In the Ecosystem Restorations Unit, Lesson 3.4, students use the Ecosystem Restoration Simulation to answer questions from pages 68-69 of the Investigative Notebook as they work through the simulations.

			Students are asked, "In the Simulation ecosystem, what is the connection between the plants and mushrooms?" This question is three dimensional addressing the SEP, Developing and Using Models. The simulation is a model. The DCI, Energy in Chemical Processes and Everyday Life (UE.PS3D.b) and the CCC, Energy and Matter, are assessed as students use the simulation to link the connection of plants and mushrooms in an ecosystem. Students demonstrate an understanding that Energy (CCC), that once came from the sun, and Matter is moved through the ecosystem from the plant to mushroom and mushroom to plant (DCI).
	8c) Scoring guidelines and rubrics **align** to performance expectations, and incorporate criteria that are specific, observable, and measurable.	**Yes**	Scoring guidelines and rubrics align to performance expectations and incorporate criteria that are specific, observable, and measurable. Student Look Fors and Possible Student Responses are given to guide teachers in their assessment of student understanding. In the Modeling Matter Unit, Lesson 2.2, students use the simulation to find solid and liquid particles that mix. Under the teacher support tab, possible student responses and Look Fors are given. In Lesson 3.7, students write their final explanations answering the unit question. An Assessment Guide is included with three different rubrics assessing the CCC, DCI, and SEP within the unit.

FINAL EVALUATION

Tier 1 ratings receive a "Yes" for all Non-negotiable Criteria and a "Yes" for each of the Additional Criteria of Superior Quality.

Tier 2 ratings receive a "Yes" for all Non-negotiable Criteria, but at least one "No" for the Additional Criteria of Superior Quality.

Tier 3 ratings receive a "No" for at least one of the Non-negotiable Criteria.

Compile the results for Sections I and II to make a final decision for the material under review.

Section	Criteria	Yes/No	Final Justification/Comments
I: Non-negotiable Criteria of Superior Quality[2]	1. Three-dimensional Learning	**Yes**	The materials are designed so that students develop scientific content knowledge and scientific skills through interacting with the three dimensions of the science standards. The majority of the materials integrate the Science and Engineering Practices, Crosscutting Concepts, and Disciplinary Core Ideas to support deeper learning.

	2. Phenomenon-Based Instruction	**Yes**	Observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning a majority of the time.
	3. Alignment & Accuracy	**Yes**	Each of the Louisiana Students Standards for Science in Grade 5 are incorporated into the full depth of the standards. The content is accurate and up to date reflecting the most current and widely accepted explanations. Minimal time is spent on content that is outside of the grade band.
	4. Disciplinary Literacy	**Yes**	Students have multiple opportunities to engage with authentic resources and are encouraged to speak and write about scientific phenomenon and engineering solutions with an emphasis on using scientific data to support scientific ideas.
II: Additional Criteria of Superior Quality[3]	5. Learning Progressions	**Yes**	The overall organization of the materials supports student mastery of the standards. The progression of learning for the Disciplinary Core Ideas are coherent and organized to ensure student mastery.
	6. Scaffolding and Support	**Yes**	There are separate teacher support materials and appropriate suggestions for multiple types of learners within the materials.
	7. Usability	**Yes**	Text sets, laboratory, and other scientific materials are readily accessible through vendor packaging. Safety notes and guidelines are embedded within the curriculum and a viable amount of material is provided to be completed within the school year.
	8. Assessment	**Yes**	Formative and summative assessments that assess the learning targets are included within the curriculum. Assessment tasks are structured on the integration of the three-dimensions and the scoring guidelines align to performance expectations.
FINAL DECISION FOR THIS MATERIAL: **Tier I, Exemplifies quality**			

[3] Must score a "Yes" for all Additional Criteria of Superior Quality to receive a Tier I rating.

Instructional materials are one of the most important tools educators use in the classroom to enhance student learning. It is critical that they fully align to state standards—what students are expected to learn and be able to do at the end of each grade level or course—and are high quality if they are to provide meaningful instructional support.

The Louisiana Department of Education is committed to ensuring that every student has access to high-quality instructional materials. In Louisiana all districts are able to purchase instructional materials that are best for their local communities since those closest to students are best positioned to decide which instructional materials are appropriate for their district and classrooms. To support local school districts in making their own local, high-quality decisions, the Louisiana Department of Education leads online reviews of instructional materials.

Instructional materials are reviewed by a committee of Louisiana educators. Teacher Leader Advisors (TLAs) are a group of exceptional educators from across Louisiana who play an influential role in raising expectations for students and supporting the success of teachers. Teacher Leader Advisors use their robust knowledge of teaching and learning to review instructional materials.

The 2018-2019 Teacher Leader Advisors are selected from across the state and represent the following parishes and school systems: Ascension, Bossier, Caddo, Central, Desoto, East Baton Rouge, Einstein Charter Schools, Iberia, InspireNOLA, Jefferson, KDHSA (Jefferson Parish Charter), Lafayette, Lincoln, Livingston, Orleans, Ouachita, Pointe Coupee, Rapides, Recovery School District, RSD - Choice Foundation, RSD – FirstLine, RSD – NOCP, St. Charles, St. Mary, St. Tammany, Tangipahoa, Vermilion, West Baton Rouge, West Feliciana, Zachary. This review represents the work of current classroom teachers with experience in grades K-8.

Appendix I.

Publisher Response

Strong science instruction requires that students:

- Apply content knowledge to explain real world phenomena and to design solutions,
- Investigate, evaluate, and reason scientifically, and
- Connect ideas across disciplines.

Title: **Amplify Science Louisiana** Grade/Course: **3**

Publisher: **Amplify Education, Inc.** Copyright: **2019**

Overall Rating: **Tier I, Exemplifies quality**

Tier I, Tier II, Tier III Elements of this review:

STRONG	WEAK
1. Three-dimensional Learning (Non-Negotiable)	
2. Phenomenon-Based Instruction (Non-Negotiable)	
3. Alignment Accuracy (Non-Negotiable)	
4. Disciplinary Literacy (Non-Negotiable)	
5. Learning Progressions	
6. Scaffolding and Support	
7. Usability	

To evaluate each set of submitted materials for alignment with the standards, begin by reviewing the indicators listed in Column 2 for the non-negotiable criteria. If there is a "Yes" for all required indicators in Column 2, then the materials receive a "Yes" in Column 1. If there is a "No" for any required indicator in Column 2, then the materials receive a "No" in Column 1. Submissions must meet Criteria 1 and 2 for the review to continue to Criteria 3 and 4. Submissions must meet all of the non-negotiable criteria in order for the review to continue to Section II.

For Section II, begin by reviewing the required indicators in Column 2 for each criterion. If there is a "Yes" for all required indicators in Column 2, then the materials receive a "Yes" in Column 1. If there is a "No" for any required indicators in Column 2, then the materials receive a "No" in Column 1.

Tier 1 ratings receive a "Yes" in Column 1 for Criteria 1 – 8.
Tier 2 ratings receive a "Yes" in Column 1 for all non-negotiable criteria, but at least one "No" in Column 1 for the remaining criteria.
Tier 3 ratings receive a "No" in Column 1 for at least one of the non-negotiable criteria.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
SECTION I: NON-NEGOTIABLE CRITERIA: Submissions must meet Criteria 1 and 2 for the review to continue to Criteria 3 and 4. Submissions must meet all of the non-negotiable criteria in order for the review to continue to Section II.				
Non-Negotiable **1. THREE-DIMENSIONAL LEARNING:** Students have multiple opportunities throughout each unit to develop an understanding and demonstrate application of the three dimensions. ☒ Yes ☐ No	**REQUIRED** **1a)** Materials are designed so that students develop scientific content knowledge and scientific skills through interacting with the three dimensions of the science standards. The majority of the materials teach the science and engineering practices (SEP), crosscutting concepts (CCC) and disciplinary core ideas (DCI) separately when necessary but they are most often integrated to support deeper learning.	**Yes**	Materials are designed so that students develop specific content knowledge and scientific skills through interacting with the three dimensions of the science standards. The majority of materials integrate the Science and Engineering Practices (SEP), Crosscutting Concepts (CCC), and Disciplinary Core Ideas (DCI) to support deeper learning. For example, in the Weather and Climate Unit, Lesson 2.3, students examine one month temperature data from three different locations using line plots (SEP, Analyzing and Interpreting Data). Students find and record temperature ranges from each location and compare temperatures and precipitation amounts (SEP, Using Mathematical and Computational Thinking) and identify and use Patterns (CCC) within each line plot to make predictions about what kind of weather might happen next (DCI, UE.ESS2D.a). In Chapter 3, students build upon this understanding as they observe graphs of average high temperatures across many years and discuss (SEP, Obtaining, Evaluating, and Communicating Information) that changes in temperature over time for a particular place repeat each year to form Patterns (SEP) that can be described as climate (DCI, ESS2D.b). Another example of three-dimensional learning is in the Environments and Survival Unit, Lesson 2.2. Students read the book Mystery Mouths and engage in Analyzing and Interpreting Data (SEP) related to the various structures of mouths to determine their functions (CCC, Structure and Function). Students make and record inferences about what various animals eat after they observe pictures of each skull. Students then read about the animal traits, what they eat, and in which environment they best survive based on their skulls (DCI, UE.LS4C.a).	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
Non-Negotiable **2. PHENOMENON-BASED INSTRUCTION:** Explaining phenomenon and designing solutions drive student learning. ☒ Yes ☐ No	**REQUIRED** **2a)** Observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning a majority of the time.	**Yes**	Observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning. For example, in the Balancing Forces Unit, students are introduced to the anchor phenomenon of a floating train that will be used as a new train service. Students are challenged to figure out how the floating train works. This provides purpose and opportunity for students to engage in the lessons that follow. In Chapter 1, students explore force and understand that forces are acting upon the train to make it move. In Lesson 1.2, students create pushes and pulls using wooden blocks in order to answer the question "What makes an object start to move?" Through this firsthand experience, students build the understanding that each time they push or pull on an object, it is an example of force. In Chapter 2, students explore magnets and explain how the train rises from the track without touching it. In Chapter 3, students investigate the force of gravity and how this affects the train and other objects on Earth. In Lesson 3.1, students drop and hold objects to experience the downward force on each object. Chapter 4 and 5 include opportunities for students to explore unbalanced forces and help to explain why the train floats even though gravity acts upon it. At the end of the unit, students connect back to the anchor phenomenon as they write a scientific explanation about the floating train, synthesizing all they have learned about gravity, magnetic force, and the ways in which multiple forces can act at the same time to create balance or unbalanced forces. In the Weather and Patterns Unit, the anchor phenomenon challenges students to investigate weather patterns on three fictional islands as they solve the problem of where to establish an orangutan reserve. This provides purpose and opportunity for students to engage in the lessons that follow. In Chapter 1, students investigate how to measure temperature and precipitation and compare weather in different locations in order to answer the question, "Which island's weather would	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			be best for orangutans?" In Chapter 2, students analyze patterns in line plots to make predictions about weather to answer the question, "Which island's weather will continue to be best for orangutans?" In Chapter 3, students analyze bar graphs of average temperature and precipitation, compare weather, seasons, and climate, and continue to make predictions about weather. In Lesson 3.7, students connect back to the anchor phenomenon as they write a scientific argument to answer the question, "Over many years, which island's weather will be the best for orangutans?" Finally, in Chapter 4, students investigate global climate patterns in order to discover where weather-related natural hazards happen. Students use what they have learned about weather and climate to find a solution that will protect the Wildlife Protection Organization's office building, then relate these ideas to their own lives. Students also have opportunities to design solutions, test theories, and make improvements to designs. In the Environment and Survival Unit, Lesson 4.2, students are challenged to create a "RoboGrazer" which helps to pull up invasive plants species and grind them up. Students design, test, and improve a model of the "RoboGrazer" using animal models, such as a giraffe neck, for inspiration. There is opportunity for improvement in the approach to phenomena throughout the materials. Materials often call for the teacher to visibly post a unit question prior to students' exposure to a phenomenon, and unit and chapter questions or problems are often identified for students without an explicit embedded opportunity for students to first generate these (or similar) questions and problems on their own.	
Non-Negotiable (only reviewed if criteria 1 and 2 are met) **3. ALIGNMENT & ACCURACY:**	**REQUIRED** **3a)** The majority of the Louisiana Student Standards for Science are incorporated, to the full **depth of the standards**.	**Yes**	100% (15 out of 15) of Louisiana Student Standards for Science for Grade 3 are addressed to the full depth of the standards.	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
Materials adequately address the Louisiana Student Standards for Science. ☒ Yes ☐ No	**REQUIRED** **3b)** Science content is **accurate**, reflecting the most current and widely accepted explanations.	**Yes**	The majority of the content is accurate and up-to-date, reflecting the most current and widely accepted explanations.	
	3c) In any one grade or course, instructional materials spend minimal time on content outside of the course, grade, or grade-band.	**Yes**	The instructional materials spend minimal time on content outside of the grade-band.	
Non-Negotiable (only reviewed if criteria 1 and 2 are met) **4. DISCIPLINARY LITERACY:** Materials have students engage with authentic sources and incorporate speaking, reading, and writing to develop scientific literacy. ☒ Yes ☐ No	**REQUIRED *Indicator for grades 4-12 only** **4a)** Students regularly engage with **authentic sources** that represent the language and style that is used and produced by scientists; e.g., journal excerpts, authentic data, photographs, sections of lab reports, and media releases of current science research. Frequency of engagement with authentic sources should increase in higher grade levels and courses.	**N/A**		
	REQUIRED **4b)** Students regularly engage in **speaking and writing** about scientific phenomena and engineering solutions using authentic science sources; e.g., authentic data, models, lab investigations, or journal excerpts. Materials address the necessity of using **scientific evidence** to support scientific ideas.	**Yes**	Students regularly engage in speaking and writing about scientific phenomena and engineering solutions using authentic sources. Materials address the necessity of using scientific evidence to support ideas. In a majority of chapters and throughout the units, students produce a written scientific explanation that details their understanding of the anchor and/or investigative phenomenon of the chapter or lesson. For example, in the Weather and Climate Unit, students participate in evidence circles to discuss which claim about finding the best long-term location for an orangutan reserve is best supported by evidence. This activity connects to the anchoring phenomenon of the unit. Students use this evidence to write a scientific argument. In the Environments and Survival Unit, Lesson 2.5, students engage in concept mapping and discuss the relationship between traits and survival of organisms. In Lesson 2.6, students connect these ideas to the grove snail population and write a scientific explanation about why snails with banded shells are more likely to survive. In the Inheritance	

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			and Traits Unit, Lesson 2.2, students participate in a "Think-Pair-Share" activity discussing the patterns of fruit fly parents and their offspring such as wing shape and body color which is based on a diagram of the parents and their offspring. Students read to learn more about these patterns, then record new ideas about parents and offspring in their Investigative Notebook.	
	REQUIRED **4c)** There is **variability** in the tasks that students are required to execute. For example, students are asked to produce solutions to problems, models of phenomena, explanations of theory development, and conclusions from investigations.	**Yes**	There is variability in the tasks that students are required to execute throughout the instructional materials. Students engage in a variety of tasks including making observations; making, writing, and supporting claims; using simulations to generate ideas and analyze data; and creating models. In the Weather and Climate Unit, Lesson 1.4 students observe daily weather and record data to analyze weather patterns. In Lesson 2.5, students identify relevant evidence to support the claim that one island may be a better home for the orangutan as opposed to another. In Lesson 4.3, students plan and build a hurricane-resistant structure to identify effective features of those structures. In the Balancing Forces Unit, in Lesson 2.2, students test the magnetic forces of various objects. Students first predict whether or not magnetic forces will act on the object. Students record their predictions in a table, indicating whether it is metal or not. Students then test each item to determine whether it is magnetic. Students engage in discussion about their observations by making claims, with evidence, about whether or not the objects are magnetic. Students complete the activity by writing a sentence that shares their conclusion from the investigation. In the Environments and Survival Unit, Lesson 3.3, students read Environmental News to investigate "why there are more cliff swallows with short wings 30 years after the highway was built." Students discuss their ideas with partners and then with the class. Students then use the digital Environments and Surviving Modeling Tool: Environment Change	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			to analyze an environmental change. Students build a model on this digital tool to show which organisms are the most likely and least likely to survive in each environment based on animal traits. Students then complete a Critical Juncture Assessment by explaining which traits for mouth structure and foot structure are adaptive and must explain their thinking.	
	4d) Materials provide a coherent sequence of authentic science sources that build scientific **vocabulary** and knowledge over the course of study. Vocabulary is addressed as needed in the materials but not taught in isolation of deeper scientific learning.	**No**	Vocabulary is presented throughout the unit as needed, but students are often told definitions and do not have the opportunity to create meanings for themselves. Often, students are frontloaded definitions and then participate in an isolated vocabulary activity of writing sentences or completing multiple meaning activities. For example in the Balancing Forces Unit, Lesson 1.1, while introducing the investigation notebook the teacher states, "The word investigate means to study or try to learn more about something. When scientists investigate, what they are doing is called an investigation." In Lesson 2.1, after reviewing force, the teacher discusses the definitions of a touching force and non-touching force. Students are not asked to determine the meaning or definition; instead, the teacher tells the students the meaning of the words and places them on the vocabulary wall. This is seen again in the Inheritance and Traits Unit, Lesson 1.2, where the teacher introduces the term organism and is to use the same approach of giving the students the definition and then posting it to the vocabulary wall. Throughout the Investigation Notebook in the Balancing Forces Unit, students are guided through a Multiple Meaning Words activity in which they are introduced to words that have different meanings. The meanings or definitions of each word are provided to them in a table. The students then determine the meaning of the word used in the sentence provided. In Lesson 1.3, students differentiate between multiple meanings of the words force, point, and object.	The Amplify Science program has a strong focus on learning academic language—both vocabulary and the ways of talking that are common to academic settings—with an emphasis on learning science vocabulary and scientific ways of talking. The program provides carefully scaffolded, authentic opportunities for students to learn and use scientific academic language as they investigate real-world problems, make arguments and explanations, and design solutions. For each Amplify Science unit, a carefully selected set of conceptually important words has been identified, and students get repeated exposure to these words through multiple modalities: reading, writing, listening, and student-to-student talk. Scientific vocabulary is introduced organically over the course of the unit through these multimodal activities rather than being "front loaded" at the beginning of a unit as a list of words to memorize. Example: Balancing Forces unit (grade 3): In Lesson 1.2, students plan and conduct investigations to test if a force can be exerted between two objects without the objects touching. They discover that this can indeed happen between magnets and some other objects. Afterwards, students engage in a student-to-student discussion in which they consider the questions, "Can a force make an object start to move without anything touching the object? What is your evidence?" To help students synthesize the information they've gathered from investigating and talking, the teacher highlights the forces they

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				mentioned in their discussions then says, "We learned that a force is a push or a pull. A touching force is a push or a pull when the objects touch. A non-touching force is a push or a pull that happens without the objects touching." Therefore, while the teacher is the one to formally define and post the vocabulary words to the classroom wall, students have been involved in the discovery of the underlying concepts of touching and non-touching forces, and have therefore taken part in the construction of their definitions/meaning. The science and literacy experts at the Lawerence Hall of Science made the pedagogical decision to embed the formal introduction of vocabulary words into the context of activities, like these two were, so that by the end of a unit, students will be able to use their own words to explain unit vocabulary, be able to use vocabulary words correctly in a variety of contexts, understand their relationships to other words, and effortlessly use them in their speech and writing when they need to explain an idea.
SECTION II: ADDITIONAL INDICATORS OF QUALITY				
Additional Criterion **5. LEARNING PROGRESSIONS:** The materials adequately address Appendix A: Learning Progressions. They are coherent and provide natural connections to other performance expectations including science and engineering practices, crosscutting concepts, and disciplinary core ideas; the content complements the the Louisiana Student Standards for Math. ☒ Yes ☐ No	**REQUIRED** **5a)** The overall organization of the materials and the development of disciplinary core ideas, science and engineering practices, and crosscutting concepts are coherent within and across units. The **progression of learning** is coordinated over time, clear and organized to prevent student misunderstanding and supports student mastery of the performance expectations.	**Yes**	The lessons within and across each unit are organized to support learning through a natural progression. Students engage with and build an understanding of the three dimensions of the standards at increasing levels of complexity and sophistication and engage in a coherent progression of learning that is coordinated over time, clear, and organized. For example, in the Inheritance and Traits Unit, the Crosscutting Concept of Patterns is presented in Lesson 1.3 as part of the discussion on the similarities and differences in traits among birds. In Lesson 1.5, students examine members of a wolfpack notating similarities and variations in traits, again noticing patterns among the pack. In Lesson 2.5, students use the Inheritance and Traits modeling tool to examine the inheritance of traits within the wolf pack and look for patterns that exist. In the Weather and Climate Unit, the Science and Engineering Practice of Analyzing and Interpreting	

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			Data is presented in Lesson 1.2 as students measure rain as part of a hands-on activity in order to describe and compare amounts of rainfall in two different locations. In Lesson 1.3, the teacher models how to read a thermometer. Students read thermometers to collect data and interpret varying temperatures. In Lesson 1.4, students begin recording data of daily weather and continue to analyze data throughout the unit.	
	5b) Students apply mathematical thinking when applicable. They are not introduced to math skills that are beyond the applicable grade's expectations in the Louisiana Student Standards for Mathematics. Preferably, **math connections** are made explicit through clear references to the math standards, specifically in teacher materials.	Yes	Students apply mathematical thinking when applicable, and mathematical standard correlations are stated within the standards overview. For example, in the Balancing Forces Unit, Lesson 5.1, students measure the distance between a magnet and a paper clip to demonstrate non touching forces. This activity correlates to standard 3.MD. A. 4 "Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch." In the Weather and Climate Unit, Lesson 1.2, students measure rainfall with cubes and compare different amounts of rain. Students also complete a temperature investigation in Lesson 1.3 by using and reading thermometers to measure temperature. Students practice interpreting the scale and intervals of the thermometer and recording temperatures. In Lesson 2.3, students read line plots and find temperature ranges.	
Additional Criterion **6. SCAFFOLDING AND SUPPORT:** Materials provide teachers with guidance to build their own knowledge and to give all students extensive opportunities and support to explore key concepts using multiple, varied experiences to build scientific thinking.	**REQUIRED** **6a)** There are separate **teacher support** materials including: scientific background knowledge, support in three-dimensional learning, learning progressions, common student misconceptions and suggestions to address them, guidance targeting speaking and writing in the science classroom (i.e. conversation guides, sample scripts, rubrics, exemplar student responses).	Yes	There are separate teacher support materials provided. Support materials within each lesson include scientific background knowledge, support in three-dimensional learning, learning progressions, common student misconceptions and suggestions to address them, guidance targeting speaking, and writing in the science classroom. Each unit provides resources used for planning the unit. The Unit Overview describes what students should figure out, why they should figure it out, and how they figure it out by the end of the unit. The Unit Map describes what students figure out and how for each Chapter. The Progression Build describes how the	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
☒ Yes ☐ No			phenomena builds on the learning throughout each unit. The Materials and Preparations section provides information on what materials are needed for each activity and how the teacher needs to prepare for each of these activities. The Science Background section provides background information about the DCIs, SEPs, and CCCs addressed in the unit. The Standards at a Glance section lists the Student Standards for Science, ELA, and Math addressed in the unit. A Teacher Reference Section includes Lesson Overview Compilation, Standards and Goals, 3-D Statements, Assessment System, Embedded Formative Assessments, Books in This Unit, Apps in this Unit, and Flextensions in This Unit. Each lesson provides an Overview, Differentiation strategies, Materials and Preparation, and Standards specific to that lesson. Each unit includes a Teacher's Guide with all of the above components along with other resources to help the teacher prepare for and teach each unit.	
	6b) Appropriate suggestions and materials are provided for **differentiated instruction** supporting varying student needs at the unit and lesson level (e.g., alternative teaching approaches, pacing, instructional delivery options, suggestions for addressing common student difficulties to meet standards, etc.).	**Yes**	Appropriate suggestions and materials are provided for differentiated instruction to support varying student needs at the unit and lesson level. Each lesson includes a section titled Differentiated Instruction. Within this section suggestions are given for students struggling, English Learners, and those who need an extension. In the Inheritance and Traits Unit, Lesson 3.3, students are asked to write about the traits of Wolf 44's Hunting Style. A secondary sheet is provided with a topic sentence and sentence frames for each main idea in the explanation to help struggling learners. For students who need more challenge, there are differentiation strategies that suggests students create a Venn diagram to show the inherited traits of their class, traits that result from the environment, and traits that result from the combination of inheritance and the environment. Students then use the diagram to write about traits	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			and where they come from. In the Environments and Survival Unit, Lesson 3.3, embedded support is provided for diverse learners. The students use the Environments and Survival Model Tool to create visual models of their ideas in order to consolidate learning. Vocabulary support suggested for English Learners emphasizes the use of specific descriptive words such as, "rounded beak, pointy beak, clawed feet, and webbed feet."	
Additional Criterion **7. USABILITY:** Materials are easily accessible, promote safety in the science classroom, and are viable for implementation given the length of a school year. ☒ Yes ☐ No	**REQUIRED** **7a)** Text sets (when applicable), laboratory, and other scientific materials are **readily accessible** through vendor packaging.	**Yes**	Text sets, laboratory, and other scientific materials are readily accessible through vendor packaging. Students have access to student apps and text through the digital platform. Each unit contains an Investigation Notebook which contains needed materials for the unit. Each unit incorporates reference books into the lesson which are accessible as eBooks. The packaged kits are also available for purchase.	
	7b) Materials help students build an understanding of standard operating procedures in a science laboratory and include **safety** guidelines, procedures, and equipment. Science classroom and laboratory safety guidelines are embedded in the curriculum.	**Yes**	Materials help students build an understanding of standard operating procedures in a science laboratory and include safety guidelines, procedures, and equipment. Science classroom and laboratory safety guidelines are embedded in the curriculum. For example, within the Investigation Notebook for each unit, safety guidelines are addressed on page 1. Safety notes such as "Don't taste things" are given. Additional safety notes are located within the lessons, as needed. For example, In the Balancing Forces Unit, Lesson 5.3, students investigate how a magnetic force can be made to stop acting. A safety note about using a 1.5 volt D battery cautions, "Do not use a rechargeable battery. The wires can get hot very quickly, putting you at risk for small burns."	
	7c) The total amount of content is **viable** for a school year.	**Yes**	The total amount of content is viable for a school year. The instructional materials contain four units with twenty-two lessons each. Each lesson contains sixty minutes of instructional time.	
Additional Criterion **8. ASSESSMENT:**	**REQUIRED** **8a) Multiple types** of formative and summative assessments (performance-based tasks, questions,	**Yes**	Multiple types of formative and summative assessments are embedded and assess the learning targets. Formative assessments such as pre-unit assessments, On-The-Fly assessments, self-	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
Materials offer assessment opportunities that genuinely measure progress and elicit direct, observable evidence of the degree to which students can independently demonstrate the assessed standards. ☒ Yes ☐ No	research, investigations, and projects) are embedded into content materials and assess the learning targets.		assessments, and critical juncture writing assessments are included in each unit. End-of-Unit Assessments and rubrics are also provided. For example, in the Weather and Climate Unit, Lesson 1.1, students write what they know about the weather and how it relates to climate as part of a Pre-Unit Assessment. In Lesson 1.6, an On-the-Fly Assessment allows students to use evidence to support a claim about which island would be best suited for the orangutan. These formative assessment opportunities build to the summative assessment such as in Lesson 3.7, where students present a final argument about which island would be best suited for the orangutan population based on all evidence about weather and patterns that have been discovered. In Lesson 4.4, End-of-Unit Assessment, students choose one of the given claims and write a scientific argument with supporting evidence to answer the question, "What changes should the Wildlife Protection Organization make to their building in order to protect it from other natural hazards?"	
	REQUIRED **8b)** Assessment items and tasks are structured on integration of the **three-dimensions**.	**Yes**	Assessment items and tasks are structured on the integration of the three-dimensions. In the Balancing Forces Unit, Lesson 5.5, the summative assessment provides the opportunity for students to assess their knowledge of the three dimensions. On the End-of-Unit Assessment, students apply what they have learned about gravity, magnetic force, and balanced and unbalanced forces to explain the floating train, why it rises and falls, and why it is sometimes stable (DCI, EU.PS2B.b). Students are also asked to Explain (SEP) why the train may change from floating to falling (CCC, Cause and Effect). In the Environments and Survival Unit, Lesson 3.4, End-of-Unit Assessment, students are asked "Why were snails with yellow shells more likely to survive in their environment 10 years ago?" Students Construct an Explanation (SEP) about why snails with yellow shells (CCC, Structure and Function) are more likely to survive in their environments 10 years ago (DCI, UE.LS4Ca).	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			Students also consider changes that have happened in the environment over the past 10 years that also affect (CCC, Cause and Effect) the organism's ability to survive (DCI, UE.LS2C.a).	
	8c) Scoring guidelines and rubrics **align** to performance expectations, and incorporate criteria that are specific, observable, and measurable.	**Yes**	Scoring guidelines and rubrics align to performance expectations and incorporate criteria that are specific, observable, and measurable. Student Look Fors and Possible Student Responses are given to guide teachers in their assessment of student understanding. In the Environments and Survival Unit, Lesson 1.3, students read about earthworms and are to connect the needs of the organism to its environment. Students make inferences and the teacher uses the discussions as a formative assessment. In the Inheritance and Traits Unit, Lesson 3.6, End of Unit Assessment, students use information and data about wolves that they have gathered from text, hands-on experiences, and their understanding of traits and inheritance to write a scientific explanation about how Wolf 44's size was determined. A rubric is provided to ensure students have revealed their understanding of the science concepts as presented in the lesson, through the Crosscutting Concept of Patterns, and the Science and Engineering Practice of Constructing Explanations. The rubric provides possible explanations to assess student understanding.	
FINAL EVALUATION ***Tier 1 ratings*** receive a "Yes" in Column 1 for Criteria 1 – 8. ***Tier 2 ratings*** receive a "Yes" in Column 1 for all non-negotiable criteria, but at least one "No" in Column 1 for the remaining criteria. ***Tier 3 ratings*** receive a "No" in Column 1 for at least one of the non-negotiable criteria.				
Compile the results for Sections I and II to make a final decision for the material under review.				
Section	**Criteria**	**Yes/No**	**Final Justification/Comments**	
I: Non-Negotiables	1. Three-dimensional Learning	**Yes**	The materials are designed so that students develop scientific content knowledge and scientific skills through interacting with the three dimensions of the science standards. The majority of the materials integrate the Science and Engineering Practices, Crosscutting Concepts, and Disciplinary Core Ideas to support deeper learning.	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
	2. Phenomenon-Based Instruction	**Yes**	Observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning a majority of the time.	
	3. Alignment & Accuracy	**Yes**	Each of the Louisiana Students Standards for Science in Grade 3 are incorporated into the full depth of the standards. The content is accurate and up to date reflecting the most current and widely accepted explanations. Minimal time is spent on content outside of the grade band.	
	4. Disciplinary Literacy	**Yes**	Students have multiple opportunities to engage with authentic resources and are encouraged to speak and write about scientific phenomenon and engineering solutions with an emphasis on using scientific data to support scientific ideas.	
II: Additional Indicators of Quality	5. Learning Progressions	**Yes**	The overall organization of the materials supports student mastery of the standards. The progression of learning for the Disciplinary Core Ideas are coherent and organized to ensure student mastery.	
	6. Scaffolding and Support	**Yes**	There are separate teacher support materials and appropriate suggestions for multiple types of learners within the materials.	
	7. Usability	**Yes**	Text sets, laboratory, and other scientific materials are readily accessible through vendor packaging. Safety notes and guidelines are embedded within the curriculum and a viable amount of material is provided to be completed within the school year.	
	8. Assessment	**Yes**	Formative and summative assessments that assess the learning targets are included within the curriculum. Assessment tasks are structured on the integration of the three-dimensions and the scoring guidelines align to performance expectations.	
FINAL DECISION FOR THIS MATERIAL: **Tier I, Exemplifies quality**				

Strong science instruction requires that students:

- Apply content knowledge to explain real world phenomena and to design solutions,
- Investigate, evaluate, and reason scientifically, and
- Connect ideas across disciplines.

Title: **Amplify Science Louisiana** Grade/Course: **4**

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Overall Rating: **Tier I, Exemplifies quality**

Tier I, Tier II, Tier III Elements of this review:

STRONG	WEAK
1. Three-dimensional Learning (Non-Negotiable)	
2. Phenomenon-Based Instruction (Non-Negotiable)	
3. Alignment Accuracy (Non-Negotiable)	
4. Disciplinary Literacy (Non-Negotiable)	
5. Learning Progressions	
6. Scaffolding and Support	
7. Usability	

To evaluate each set of submitted materials for alignment with the standards, begin by reviewing the indicators listed in Column 2 for the non-negotiable criteria. If there is a "Yes" for all required indicators in Column 2, then the materials receive a "Yes" in Column 1. If there is a "No" for any required indicator in Column 2, then the materials receive a "No" in Column 1. Submissions must meet Criteria 1 and 2 for the review to continue to Criteria 3 and 4. Submissions must meet all of the non-negotiable criteria in order for the review to continue to Section II.

For Section II, begin by reviewing the required indicators in Column 2 for each criterion. If there is a "Yes" for all required indicators in Column 2, then the materials receive a "Yes" in Column 1. If there is a "No" for any required indicators in Column 2, then the materials receive a "No" in Column 1.

Tier 1 ratings receive a "Yes" in Column 1 for Criteria 1 – 8.
Tier 2 ratings receive a "Yes" in Column 1 for all non-negotiable criteria, but at least one "No" in Column 1 for the remaining criteria.
Tier 3 ratings receive a "No" in Column 1 for at least one of the non-negotiable criteria.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
SECTION I: NON-NEGOTIABLE CRITERIA: Submissions must meet Criteria 1 and 2 for the review to continue to Criteria 3 and 4. Submissions must meet all of the non-negotiable criteria in order for the review to continue to Section II.				
Non-Negotiable **1. THREE-DIMENSIONAL LEARNING:** Students have multiple opportunities throughout each unit to develop an understanding and demonstrate application of the three dimensions. ☒ Yes ☐ No	**REQUIRED** **1a)** Materials are designed so that students develop scientific content knowledge and scientific skills through interacting with the three dimensions of the science standards. The majority of the materials teach the science and engineering practices (SEP), crosscutting concepts (CCC) and disciplinary core ideas (DCI) separately when necessary but they are most often integrated to support deeper learning.	**Yes**	Materials are designed so that students develop specific content knowledge and scientific skills through interacting with the three dimensions of the science standards. The majority of materials integrate the Science and Engineering Practices (SEP), Crosscutting Concepts (CCC), and Disciplinary Core Ideas (DCI) to support deeper learning. For example, in the Vision and Light Unit, Lesson 1.3, students begin to build an understanding of how animals use their senses to receive information (DCI, UE.LS1D.a) using Investigating Animal Senses, a book about groups of students who investigate which senses animals use to find food. As the students read, they take turns Asking Questions (SEP) about the content with a partner. Students also examine Cause and Effect (CCC) relationships as they read about the students in the book who observe a lizard and a mealworm and then change one variable at a time to determine how lizards sense food. Students then complete an Investigation (SEP) using their sense of hearing and smell to determine objects inside a cup before and after removing the "hearing and smelling blocks." They discuss the Cause and Effect (CCC) of removing the blocks and how using sight and sound can transfer information about the environment. Students have additional opportunities to engage with the SEPs, CCCs, and DCIs throughout the unit. In Lesson 4.5, students Develop and Use a Model (SEP) of an eye with either high or low sensitivity to light (DCI, UE.PS4B.a). Students use the model to help Investigate (SEP) the question "[h]ow could more light at night make it hard for a Tokay gecko to see its prey?" During the activity, students apply their learning about the Structure and Function (DCI, UE.LS1D.a) of the parts of that eye that allow the	

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			animal to see. Students discuss and explain what happens when the brain processes information and how this affects (CCC, Cause and Effect) the amount of light needed to see. In the Earth's Features Unit, Lesson 1.5, students Develop a Model (SEP) to show how a sedimentary rock layer forms over time by using various materials provided to the class. Students Use the Model (SEP) to determine how sediment "sediment cements and forms a rock layer." Developing and examining the model helps build student understanding of how rock formations change over time (DCI, UE.ESS1C.a) and how Patterns (CCC) of sedimentary rock forms over a long period of time.	
Non-Negotiable **2. PHENOMENON-BASED INSTRUCTION:** Explaining phenomenon and designing solutions drive student learning. ☒ Yes ☐ No	**REQUIRED** **2a)** Observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning a majority of the time.	**Yes**	Observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning. For example, in the Earth Features Unit, students engage with a phenomenon of a fossil found in a rocky outcrop of sedimentary rocks. This provides purpose and opportunity for students to investigate how the fossil got there and how the rocks formed in Chapter 1. In Chapter 2, students have the opportunity to further build explanations of the anchoring phenomenon as they use inferences to tell what the environment may have been like long ago based on the layers of rock. In Lesson 2.4, students analyze two different rock samples from a rocky outcrop to help answer the question, "How can there be different sedimentary rock layers in the same place?" Students then use a simulation model to further investigate how different environments in the same location can cause different sediment build up. In Chapter 3, students continue to investigate the patterns found in sedimentary rocks and form explanations about how the layers form. In Lesson 3.3, students use evidence from the Class Sedimentary Rock Formation Model and from the Fossil Hunter's Handbook to make a claim about which rock layer in Hunstanton Cliff is older. Finally, in Chapter 4, students investigate how rock layers change over time and erosion affects the	

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			environment. In Lesson 4.5, students apply the concept of erosion and use their understanding about the anchoring phenomenon to make an evidence-based claim to answer the question, "Why did more rock layers get exposed in Desert Rocks Canyon than in Keller's Cannon?" In the Waves, Energy, and Information Unit, the anchoring phenomenon invites students to take on the role of marine scientists. Students are introduced to the phenomenon as they learn about a mother dolphin and her calf who get separated but are able to find one another using signals underwater. This provides purpose and opportunity for students to engage in the lessons that follow. In Chapter 1, students infer that sound is how the dolphins communicate which leads them to investigate and figure out if sound can be used to signal another underwater and if sound can travel underwater. In Lesson 1.3, students build upon this idea by learning about waves and the source of waves through a hands-on activity of making waves with a rope and a spring toy. Students apply this concept to sound waves as they use a Sound Waves Simulation in Lesson 1.4. In Chapter 3, students investigate sound waves further by using the simulation to figure out that the larger the amplitude, the louder the sound. Students also explore pitch by making and using straw reeds to discover that the wavelength of a sound is related to the pitch of the sound. Students then use what they have learned about sound and patterns of communication to write a final explanation connecting back to the anchor phenomenon of how the dolphin calf is able to hear and recognize its mother's call. Students also have opportunities to design solutions, test theories, and make improvements to designs. In the Energy Conversions Unit, students are presented with the problem of a town experiencing frequent blackouts and are asked to make improvements to the electrical system. Students make discoveries about how electrical systems work through hands-on investigations,	

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			discussion, reading, writing, simulations, and models. Students are challenged to design improvements to the electrical system, while they consider certain criteria such as cost, convenience, and impact on the environment. Students develop an understanding about electrical grids and alternate forms of energy throughout the unit. In Lesson 2.4, students write an argument introducing ways to help solve the blackout problem, such as reducing electrical use by replacing old lights with LED lights. In Chapter 3, students use an Energy Conversions Simulation and read for information then conduct hands-on investigations to discover that energy for the electrical system comes from a source, and that source energy is converted to electrical energy by a converter. In Lesson 3.4, students design, build, and test a wind turbine as a solution to the blackout problem. In Lesson 4.5, students use concepts and ideas that have been built throughout the unit to connect back to the anchoring phenomenon by presenting an argument from evidence about the best two solutions for improving the town’s electric system. There is opportunity for improvement in the approach to phenomena throughout the materials. Materials often call for the teacher to visibly post a unit question prior to students’ exposure to a phenomenon, and unit and chapter questions or problems are often identified for students without an explicit embedded opportunity for students to first generate these (or similar) questions and problems on their own.	
Non-Negotiable (only reviewed if criteria 1 and 2 are met) **3. ALIGNMENT & ACCURACY:** Materials adequately address the Louisiana Student Standards for Science.	**REQUIRED** **3a)** The majority of the Louisiana Student Standards for Science are incorporated, to the full **depth of the standards**.	**Yes**	The majority, 93% (13 out of 14), of Louisiana Student Standards for Science for Grade 4 are addressed to the full depth of the standards. LSSS 4-ESS2-3 is not met to the full depth of the standard. The DCI, UE.ESS2E.a, “living things affect the physical characteristics of their environment," is not fully developed. Only one example could be found regarding how living things affect the physical characteristics of their environment. In the Earth’s	

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☒ Yes ☐ No			Features Unit, Lessons 4.2 and 4.3, students consider how rock can be exposed in various places and read Rocky Wonders, a book that includes a possible explanation of how a cherry tree in Japan growing out of a granite boulder broke the boulder in half as it grew.	
	REQUIRED **3b)** Science content is **accurate**, reflecting the most current and widely accepted explanations.	**Yes**	The majority of the content is accurate and up-to-date, reflecting the most current and widely accepted explanations.	
	3c) In any one grade or course, instructional materials spend minimal time on content outside of the course, grade, or grade-band.	**Yes**	The instructional materials spend minimal time on content outside of the grade-band.	
Non-Negotiable (only reviewed if criteria 1 and 2 are met) **4. DISCIPLINARY LITERACY:** Materials have students engage with authentic sources and incorporate speaking, reading, and writing to develop scientific literacy. ☒ Yes ☐ No	**REQUIRED *Indicator for grades 4-12 only** **4a)** Students regularly engage with **authentic sources** that represent the language and style that is used and produced by scientists; e.g., journal excerpts, authentic data, photographs, sections of lab reports, and media releases of current science research. Frequency of engagement with authentic sources should increase in higher grade levels and courses.	**Yes**	Students regularly engage with authentic resources that represent the language and style used and produced by scientists. The instructional materials incorporate a variety of authentic sources such as photographs, media content, graphs, and articles. For example, in the Vision and Light Unit, Lesson 1.2, students view photographs of animal's external structures such as a pig snout or cat whiskers then discuss the function and use of the structures. In Lesson 1.4, students view videos of animals and plants to discuss how internal and external structures aid in the growth of living things. Students interact with diagrams and text to gain information related to various topics. In the Energy Conversions Unit, Lesson 4.2, students read the article "Blackout" and analyze an electrical system diagram to identify the cause of the electrical difficulty. Although the article is fictional, it details a real-world problem of failing electrical systems and how to improve these systems. Students are able to gather authentic data throughout the units by the use of the simulations provided. In the Energy Conversions Simulation, students construct various devices with energy sources. They are then able to see what types of energy are transferred and analyze how much energy is transferred in and out of the device. In Chapter 1, the Earth's Features Unit, students read an informational text about a paleontologist who studies fossils to make	

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			inferences about extinct organisms. In Chapter 3, students use a digital modeling tool to communicate their understanding of rock layer formation. Several photos are used throughout the unit for students to examine rock layers in order to understand how they formed and changed over time.	
	REQUIRED **4b)** Students regularly engage in **speaking and writing** about scientific phenomena and engineering solutions using authentic science sources; e.g., authentic data, models, lab investigations, or journal excerpts. Materials address the necessity of using **scientific evidence** to support scientific ideas.	**Yes**	Students regularly engage in speaking and writing about scientific phenomena and engineering solutions using authentic sources. Materials address the necessity of using scientific evidence to support ideas. In a majority of chapters and throughout the units, students produce a written scientific explanation that details their understanding of the anchor and/or investigative phenomenon of the chapter or lesson. For example, in the Earth's Features Unit Lesson, 1.6 students engage in evidence circles to discuss evidence to support the claim that the Desert Rock National Park used to be underwater. Students use this evidence to write a scientific argument. In the Vision and Light Unit, Lesson 1.2, students are asked to Think-Write-Pair-Share. Students are given the question, "How do animals use their senses to get information about their environment?" Students are to write their thoughts, then share them with other students. Students are speaking and writing about science using evidence. In the Waves, Energy, and Information Unit, Lesson 3.6, students reflect on and write about how dolphins communicate using sound. This activity is in preparation for a Science Forum, where students engage in structured classroom discussion and share their ideas with one another. In Lesson 3.7, students write their final explanation of how a dolphin calf is able to hear and recognize its mother's call.	

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	REQUIRED **4c)** There is **variability** in the tasks that students are required to execute. For example, students are asked to produce solutions to problems, models of phenomena, explanations of theory development, and conclusions from investigations.	**Yes**	There is variability in the tasks that students are required to execute throughout the instructional materials. Students engage in a variety of tasks including making observations; making, writing, and supporting claims; using simulations to generate ideas and analyze data; and creating models. For example, in the Energy Conversions Unit, Lesson 1.3, students create a simple electrical system and observe how energy is transferred. In Lesson 2.4, students make claims and propose solutions to the Ergstown blackout problem. In the Vision and Light Unit, Lesson 2.4, students use the Vision and Light Simulation to look at variables and to show how a predator uses light to see its prey. Students are introduced to models that show how light allows animals to see and are then asked to model how the mystery box, an activity introduced earlier in the unit, works. In the Earth's Systems Unit, Lesson 3.2, students are introduced to an analogy of a coat pile to describe how layers of rocks are older than other layers. Students then make observations of the rock layers and their Paper Pile Model. In their Fossil Hunter's Handbook, students make a claim about which rock layers are older. Students then use the Earth's Features Modeling Tool to create models of rock layers. Throughout the Waves, Energy, and Information Unit, students create and revise a sound diagram showing how sound travels through water from a mother dolphin to her calf. Students use understandings they have developed through firsthand investigations of sound travel and use of the Sound Waves Simulation to write a scientific explanation of how sound energy travels through water. Students also listen to real dolphin calls to further investigate sound pitch in order to discuss and write about how a calf knows which call belongs to its mother.	

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	4d) Materials provide a coherent sequence of authentic science sources that build scientific **vocabulary** and knowledge over the course of study. Vocabulary is addressed as needed in the materials but not taught in isolation of deeper scientific learning.	**No**	Vocabulary is presented throughout the unit as needed, but students are often told definitions and do not have the opportunity to create meanings for themselves. Often, students are frontloaded definitions and then participate in an isolated vocabulary activity of writing sentences or completing multiple meaning activities. For example in the Waves, Energy, and Information Unit, Lesson 1.1, while introducing the phenomenon of how dolphins communicate the teacher states, "You will be investigating how dolphins communicate. The word communicate means to share information." The teacher posts the word on the vocabulary wall. In the same unit, students are asked to complete Word Relationships in their Investigative Notebook. Students write sentences from a list of vocabulary words to answer a question. Although the sentences they create incorporate science ideas they have been learning, this activity is taught in isolation. This same approach is used throughout the materials. Throughout the Investigation Notebook, students are guided through a Multiple Meaning Words activity in which they are introduced to words that have different meanings. The meanings or definitions of each word are provided to students in a table where they must then determine the meaning of the word used in the sentence provided. For example, as in the Energy Conversions Unit, Lesson 2.2, where students differentiate between multiple meanings of the words run, form, cool, and plant.	The Amplify Science program has a strong focus on learning academic language—both vocabulary and the ways of talking that are common to academic settings—with an emphasis on learning science vocabulary and scientific ways of talking. The program provides carefully scaffolded, authentic opportunities for students to learn and use scientific academic language as they investigate real-world problems, make arguments and explanations, and design solutions. For each Amplify Science unit, a carefully selected set of conceptually important words has been identified, and students get repeated exposure to these words through multiple modalities: reading, writing, listening, and student-to-student talk. Scientific vocabulary is introduced organically over the course of the unit through these multimodal activities rather than being "front loaded" at the beginning of a unit as a list of words to memorize. Examples: Waves, Energy, and Information unit (grade 4): In Lesson 1.1, students are introduced to the unit context and anchor phenomenon in the unit: the will take on the role of marine scientists helping to explain how, when a mother dolphin and her calf are separated, they somehow use signals underwater to find one another again. During the initial introduction of the unit, the teacher uses the word "communicate" a number of times, including one instance where she explains how the park superintendent "has also noticed that the dolphins seem to be able to communicate, or share information, with one another—often using body language to signal when they have found food or when a predator is nearby." Students are then invited to share their initial ideas about how dolphins send signals to one another. After the discussion, "communicate" is introduced formally as a vocabulary word. The activity immediately following the posting of the vocabulary word features students brainstorming ways they know of

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				that living things communicate without seeing one another. This gives students enough context to respond to the prompt in the Pre-unit Assessment that concludes the lesson, and prepares them for beginning to investigate sound waves in the next. Repeatedly hearing and using the word in this lesson, and in most others throughout the unit, gives context and authenticity to the learning of the word "communicate," beyond mere memorization.
SECTION II: ADDITIONAL INDICATORS OF QUALITY				
Additional Criterion **5. LEARNING PROGRESSIONS:** The materials adequately address Appendix A: Learning Progressions. They are coherent and provide natural connections to other performance expectations including science and engineering practices, crosscutting concepts, and disciplinary core ideas; the content complements the the Louisiana Student Standards for Math. ☒ Yes ☐ No	**REQUIRED** **5a)** The overall organization of the materials and the development of disciplinary core ideas, science and engineering practices, and crosscutting concepts are coherent within and across units. The **progression of learning** is coordinated over time, clear and organized to prevent student misunderstanding and supports student mastery of the performance expectations.	**Yes**	The lessons within and across each unit are organized to support learning through a natural progression. Students engage with and build an understanding of the three dimensions of the standards at increasing levels of complexity and sophistication and engage in a coherent progression of learning that is coordinated over time, clear, and organized. For example, in the Earth's Features Unit, the Crosscutting Concept of Cause and Effect is presented in Lesson 1.3 as part of the discussion on how fossils form. In Lesson 2.2, students read about conglomerate rocks and sandstone and determine the causes that makes the rocks different. In Lesson 2.5, the teacher discusses the causes and effects of different environments and the rocks that form there while preparing to write an explanation of the fossil found within the desert rocks. In the Vision and Light Unit, the Science and Engineering Practice of Asking Questions is presented in Lesson 1.3 where students are to ask questions and obtain information. The teacher models how to ask questions while reading. After reading the first paragraph the teacher states, "This makes me wonder: Do other animals have the same five senses that we have? Do they have the senses of hearing, smell, touch, taste, and vision?" Students are to read with partners and ask questions about what they are reading. Students continue to ask questions in the next chapter to gain information	

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			about vision and light. At the end of the unit, in Lesson 5.1, students are to decide on their own investigation question, write out the steps needed in their investigation, and predict the results.	
	5b) Students apply mathematical thinking when applicable. They are not introduced to math skills that are beyond the applicable grade's expectations in the Louisiana Student Standards for Mathematics. Preferably, **math connections** are made explicit through clear references to the math standards, specifically in teacher materials.	**Yes**	Students apply mathematical thinking when applicable. The LSSS for Grade 4 do not specifically address SEP, "Using mathematics and computational thinking." However, there is some evidence of students using mathematical thinking when needed. For example, in Lesson 2.1 of the Energy Conversions Unit, students transfer a certain number of units of energy from an energy source to a device and then analyze the data generated on a bar graph after the simulation is ran. In Lesson 3.2 of the Waves, Energy, and Information Unit, students create straw reeds and then shorten them by measuring and cutting 3 cm off each end of the straw.	
Additional Criterion **6. SCAFFOLDING AND SUPPORT:** Materials provide teachers with guidance to build their own knowledge and to give all students extensive opportunities and support to explore key concepts using multiple, varied experiences to build scientific thinking. ☒ Yes ☐ No	**REQUIRED** **6a)** There are separate **teacher support** materials including: scientific background knowledge, support in three-dimensional learning, learning progressions, common student misconceptions and suggestions to address them, guidance targeting speaking and writing in the science classroom (i.e. conversation guides, sample scripts, rubrics, exemplar student responses).	**Yes**	There are separate teacher support materials provided. Support materials within each lesson include scientific background knowledge, support in three-dimensional learning, learning progressions, common student misconceptions and suggestions to address them, guidance targeting speaking, and writing in the science classroom. Each unit provides resources used for planning the unit. The Unit Overview describes what students should figure out, why they should figure it out, and how they figure it out by the end of the unit. The Unit Map describes what students figure out and how for each Chapter. The Progression Build describes how the phenomena builds on the learning throughout each unit. The Materials and Preparations section provides information on what materials are needed for each activity and how the teacher needs to prepare for each of these activities. The Science Background section provides background information about the DCIs, SEPs, and CCCs addressed in the unit. The Standards at a Glance section lists the Student Standards for Science, ELA, and Math addressed in the unit.	

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			A Teacher Reference Section includes Lesson Overview Compilation, Standards and Goals, 3-D Statements, Assessment System, Embedded Formative Assessments, Books in This Unit, Apps in this Unit, and Flextensions in This Unit. Each lesson provides an Overview, Differentiation strategies, Materials and Preparation, and Standards specific to that lesson. Each unit includes a Teacher's Guide with all of the above components along with other resources to help the teacher prepare for and teach each unit.	
	6b) Appropriate suggestions and materials are provided for **differentiated instruction** supporting varying student needs at the unit and lesson level (e.g., alternative teaching approaches, pacing, instructional delivery options, suggestions for addressing common student difficulties to meet standards, etc.).	**Yes**	Appropriate suggestions and materials are provided for differentiated instruction to support varying student needs at the unit and lesson level. Each lesson includes a section titled Differentiated Instruction. Within this section suggestions are given for students struggling, English Learners, and those who need an extension. In the Energy Conservation Unit, Lesson 3.4, differentiation strategies for students "who need more challenge" suggests that students read from It's All Energy and consider how energy is transferred. Students are then to draw a diagram of this energy transfer. In the same lesson there are suggestions for teachers with Diverse Learners that advises them to show the physical materials to students as they design a wind turbine. In the Earth's Features Unit, Lesson 3.2, differentiation strategies are suggested for "students who need more support" through additional modeling of searching for and writing down evidence in Activity 2. Teachers are advised to think aloud as they decide which evidence to draw from the text and when summarizing the evidence when writing.	
Additional Criterion **7. USABILITY:** Materials are easily accessible, promote safety in the science	**REQUIRED** **7a)** Text sets (when applicable), laboratory, and other scientific materials are **readily accessible** through vendor packaging.	**Yes**	Text sets, laboratory, and other scientific materials are readily accessible through vendor packaging. Students have access to student apps and text through the digital platform. Each unit contains an Investigation Notebook which contains needed materials for the unit. Each unit incorporates	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
classroom, and are viable for implementation given the length of a school year. ☒ Yes ☐ No			reference books into the lesson which are accessible as eBooks. The packaged kits are also available for purchase.	
	7b) Materials help students build an understanding of standard operating procedures in a science laboratory and include **safety** guidelines, procedures, and equipment. Science classroom and laboratory safety guidelines are embedded in the curriculum.	**Yes**	Materials help students build an understanding of standard operating procedures in a science laboratory and include safety guidelines, procedures, and equipment. Science classroom and laboratory safety guidelines are embedded in the curriculum. For example, within the Investigation Notebook for each unit, safety guidelines are addressed on page 1. Safety notes such as "Don't taste things" are given. Additional safety notes are located within the lessons, as needed. For example, in the Energy Conversions Unit, Lesson 1.3, safety considerations given prior to building an electrical system states, "Ensure that students do not clip the alligator clips to their skin."	
	7c) The total amount of content is **viable** for a school year.	**Yes**	The total amount of content is viable for a school year. The instructional materials contain four units with twenty-two lessons each. Each lesson contains sixty minutes of instructional time.	
Additional Criterion **8. ASSESSMENT:** Materials offer assessment opportunities that genuinely measure progress and elicit direct, observable evidence of the degree to which students can independently demonstrate the assessed standards. ☒ Yes ☐ No	**REQUIRED** **8a) Multiple types** of formative and summative assessments (performance-based tasks, questions, research, investigations, and projects) are embedded into content materials and assess the learning targets.	**Yes**	Multiple types of formative and summative assessments are embedded and assess the learning targets. Formative assessments such as pre-unit assessments, On-The-Fly assessments, self-assessments, and critical juncture writing assessments are included in each unit. End-of-Unit Assessments and rubrics are also provided. For example, in the Vision and Light Unit, Lesson 1.4, students complete a Critical Juncture Assessment writing about how animals use their senses. In Lesson 2.5, students complete another Critical Juncture Assessment writing about how light allows animals to see. These formative assessments build to the summative assessment such as in Lesson 4.6, where students write a final explanation about why more light at night makes it harder for the Tokay gecko to see. In the Earth's Features Unit, there are two End of Unit Assessments available to assess student knowledge of the standards. In the Lesson 3.5, End-of-Unit Assessment, students develop	

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			arguments about the anchor phenomena introduced at the beginning of the unit in response to two questions. In Lesson 4.5, End-of-Unit Assessment, students must respond using scientific evidence.	
	REQUIRED **8b)** Assessment items and tasks are structured on integration of the **three-dimensions**.	**Yes**	Assessment items and tasks are structured on the integration of the three-dimensions. In the Waves, Energy, and Information Unit, Lesson 3.7, the summative assessment provides opportunities for students to assess their knowledge of the three dimensions. On the Scientific Explanation of How Dolphins Communicate sheet, students are asked to look at Models (Developing and Using Models, SEP) of wavelengths and answer questions about the Patterns (CCC) of the wavelengths that were produced by a mother dolphin and its calf in water. This also addresses the DCI UE.PS4A.a. In the Energy Conversions Unit, Lesson 4.1, students read about Systems (CCC) to better understand how systems might fail and then build a simple electrical system to serve as a Model (SEP) while investigating energy (DCI,UE.PS3Bc) and the causes of system failures. Students identify the cause of failure of the other team's System (CCC) and then make a prediction about whether or not a particular Solution (SEP) will make a system function properly. During this activity, the teacher circulates to assess student understanding of how systems can fail as it relates to energy transfer (DCI, UE.PS3Bc) using an On-The-Fly Assessment. In the Earth's Features Unit, Lesson 2.4, students use the Rock Layers Simulator to construct an explanation of how the area has changed over time. This formative assessment, which is provided in the Student Investigation Notebook, addresses the SEP, Constructing Explanations and Designing Solutions, the DCI, UE.ESS1.C.a, and the CCC, Patterns.	
	8c) Scoring guidelines and rubrics **align** to performance expectations, and incorporate criteria that are specific, observable, and measurable.	**Yes**	Scoring guidelines and rubrics align to performance expectations and incorporate criteria that are specific, observable, and measurable. Student Look	

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			Fors and Possible Student Responses are given to guide teachers in their assessment of student understanding. In the Waves, Energy, and Information Unit, Lesson 3.1, students use the simulation to investigate amplitude and how changes in amplitude are connected to the wave. Under the teacher support tab, possible student responses and Look Fors are given. In Lesson 3.7, students write the final their explanations answering the unit question. An Assessment Guide is included with three different rubrics assessing the CCC, DCIs, and SEPs within the unit.	
FINAL EVALUATION ***Tier 1 ratings*** receive a "Yes" in Column 1 for Criteria 1 – 8. ***Tier 2 ratings*** receive a "Yes" in Column 1 for all non-negotiable criteria, but at least one "No" in Column 1 for the remaining criteria. ***Tier 3 ratings*** receive a "No" in Column 1 for at least one of the non-negotiable criteria.				
Compile the results for Sections I and II to make a final decision for the material under review.				
Section	**Criteria**	**Yes/No**	**Final Justification/Comments**	
I: Non-Negotiables	1. Three-dimensional Learning	**Yes**	The materials are designed so that students develop scientific content knowledge and scientific skills through interacting with the three dimensions of the science standards. The majority of the materials integrate the Science and Engineering Practices, Crosscutting Concepts, and Disciplinary Core Ideas to support deeper learning.	
	2. Phenomenon-Based Instruction	**Yes**	Observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning a majority of the time.	
	3. Alignment & Accuracy	**Yes**	The majority, 93%, of the Louisiana Students Standards for Science in Grade 4 are incorporated into the full depth of the standards. The content is accurate and up to date reflecting the most current and widely accepted explanations. Minimal time is spent on content outside the grade band.	
	4. Disciplinary Literacy	**Yes**	Students have multiple opportunities to engage with authentic resources and are encouraged to speak and write about scientific phenomenon and engineering solutions with an emphasis on using scientific data to support scientific ideas.	

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II: Additional Indicators of Quality	5. Learning Progressions	**Yes**	The overall organization of the materials supports student mastery of the standards. The progression of learning for the Disciplinary Core Ideas are coherent and organized to ensure student mastery.	
	6. Scaffolding and Support	**Yes**	There are separate teacher support materials and appropriate suggestions for multiple types of learners within the materials.	
	7. Usability	**Yes**	Text sets, laboratory, and other scientific materials are readily accessible through vendor packaging. Safety notes and guidelines are embedded within the curriculum and a viable amount of material is provided to be completed within the school year.	
	8. Assessment	**Yes**	Formative and summative assessments that assess the learning targets are included within the curriculum. Assessment tasks are structured on integration of the three-dimensions and scoring guidelines align to performance expectations.	
FINAL DECISION FOR THIS MATERIAL: **Tier I, Exemplifies quality**				

Strong science instruction requires that students:

- Apply content knowledge to explain real world phenomena and to design solutions,
- Investigate, evaluate, and reason scientifically, and
- Connect ideas across disciplines.

Title: **Amplify Science** Grade/Course: **5**

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Overall Rating: **Tier I, Exemplifies quality**

Tier I, Tier II, Tier III Elements of this review:

STRONG	WEAK
1. Three-dimensional Learning (Non-negotiable)	
2. Phenomenon-Based Instruction (Non-negotiable)	
3. Alignment & Accuracy (Non-negotiable)	
4. Disciplinary Literacy (Non-negotiable)	
5. Learning Progressions	
6. Scaffolding and Support	
7. Usability	
8. Assessment	

To evaluate instructional materials for alignment with the standards and determine tiered rating, begin with **Section I: Non-negotiable Criteria**.

- Review the **required**[1] Indicators of Superior Quality for each **Non-negotiable** criterion.
- If there is a "Yes" for all **required** Indicators of Superior Quality, materials receive a "Yes" for that **Non-negotiable** criterion.
- If there is a "No" for any of the **required** Indicators of Superior Quality, materials receive a "No" for that **Non-negotiable** criterion.
- Materials must meet **Non-negotiable** Criteria 1 and 2 for the review to continue to **Non-negotiable** Criteria 3 and 4. Materials must meet all of the **Non-negotiable** Criteria 1-4 in order for the review to continue to Section II.
- If materials receive a "No" for any **Non-negotiable** criterion, a rating of Tier 3 is assigned and the review does not continue.

If all Non-negotiable Criteria are met, then continue to **Section II: Additional Criteria of Superior Quality.**

- Review the **required** Indicators of Superior Quality for each criterion.
- If there is a "Yes" for all **required** Indicators of Superior Quality, then the materials receive a "Yes" for the additional criteria.
- If there is a "No" for any **required** Indicator of Superior Quality, then the materials receive a "No" for the additional criteria.

Tier 1 ratings receive a "Yes" for all Non-negotiable Criteria and a "Yes" for each of the Additional Criteria of Superior Quality.
Tier 2 ratings receive a "Yes" for all Non-negotiable Criteria, but at least one "No" for the Additional Criteria of Superior Quality.
Tier 3 ratings receive a "No" for at least one of the Non-negotiable Criteria.

[1] **Required Indicators of Superior Quality** are labeled "**Required**" and shaded yellow. Remaining indicators that are shaded white are included to provide additional information to aid in material selection and do not affect tiered rating.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
Section I: Non-negotiable Criteria of Superior Quality **Materials must meet Non-negotiable Criteria 1 and 2 for the review to continue to Non-negotiable Criteria 3 and 4. Materials must meet all of the Non-negotiable Criteria 1-4 in order for the review to continue to Section II.**				
Non-negotiable **1. THREE-DIMENSIONAL LEARNING:** Students have multiple opportunities throughout each unit to develop an understanding and demonstrate application of the three dimensions. ☒ Yes ☐ No	**Required** **1a)** Materials are designed so that students develop scientific content knowledge and scientific skills through interacting with the three dimensions of the science standards. The majority of the materials teach the science and engineering practices, crosscutting concepts and disciplinary core ideas separately when necessary but they are most often integrated to support deeper learning.	**Yes**	Materials are designed so that students develop specific content knowledge and scientific skills through interacting with the three dimensions of the science standards. The majority of materials integrate the Science and Engineering Practices (SEP), Crosscutting Concepts (CCC), and Disciplinary Core Ideas (DCI) to support deeper learning. For example, in the Modeling Matter Unit, Lesson 1.5, students engage with a fan model (SEP, Developing and Using Models) while representing molecules and the differing properties that they might have. Students observe foam peanuts, rocks, ball res, and pieces of Velcro as a fan blows to observe the varying properties and attractions of molecules (DCI UE.PS1A.a). Students observe this model using “nano vision goggles”(a visual representation strategy used throughout the text) to understand that this model represents items too small to be seen. This strategy allows students to build an understanding of the concept of Scale, Proportion and Quantity (CCC) at the lesson and chapter level. Another example of three-dimensional learning can be found in the Ecosystem Restoration Unit. In Lesson 1.5, students use a simulation model to begin to understand and explain the phenomenon of failing ecosystems (SEP, Developing and Using Models). The simulation models help students visualize how animals use food molecules to provide them with the materials they need for growth, energy, and motion (DCI UE.LS1C.a). Throughout this lesson and unit, students discover that energy in animals’ food was once energy from the sun (DCI UE.PS3D.b) and are able to describe the various ways in which that energy could have been	

			transferred between organisms in an ecosystem (CCC, Energy and Matter). In The Earth's Systems Unit, Lesson 2.7, students design a fresh water collection system (SEP, Developing and Using Models) that will collect freshwater from saltwater. In groups, students decide which parts they will include for their collection system, keeping in mind the specific purpose for each part (CCC, Systems and System Models). Students develop and test their design to collect fresh water from salt water by creating a system that condenses water vapor into liquid vapor. As students progress to the next chapter, to test the success of their designs, they discuss whether or not their designs met the criteria and why and then use this information to improve their systems (DCI ETS.UE.1B.c).	
Non-negotiable **2. PHENOMENON-BASED INSTRUCTION:** Explaining phenomenon and designing solutions drive student learning. ☒ Yes ☐ No	**Required** **2a)** Observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning a majority of the time.	**Yes**	Observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning a majority of the time. For example, in the Patterns of Earth and Sky Unit, students are asked to figure out and explain the illustrations on a fictional artifact that depicts the sky looking differently at different times. This serves as the anchor phenomenon for the unit. In Chapter 1, students investigate why we don't see stars during the day through a series of lessons that include digital simulations of stars and classroom models using students and scaled measurements. Students discuss the brightness of stars and compare this idea to the headlights of a car at night. In Chapter 2, students investigate why the sun is visible during the day and not at night. Chapter 3 focuses on the patterns of various stars throughout the year and the patterns that we observe from Earth. Chapter 4 connects the evidence that students have gathered from investigations, reading simulations and models to create an explanation of the anchor phenomenon in a piece of writing. In the Ecosystem Restoration Unit, students are asked to investigate why "[t]he jaguars, sloths, and cecropia trees in a reforested section of a Costa Rican rainforest are not growing and thriving." This serves as the anchor phenomenon for the unit.	

			During the unit, students investigate and explain what these three organisms need to survive in a Costa Rican rainforest. The investigative phenomena throughout the unit support and build students' understanding of the anchor phenomena through investigative reading, analyzing data, writing arguments, making recommendations for improvement, creating and using models, using simulations, and completing hands-on investigations. In Lesson 2.1, students investigate why "plants grow and thrive differently in different terrariums." Students build on key understandings they have developed thus far that are related to the anchor phenomenon to explain how jaguars and sloths are not thriving because there is a lack of producers. Students continue to investigate and explain the needs of producers to understand what they need to survive and the importance of decomposers within an ecosystem. At the end of the unit, students connect back to the anchor phenomenon as they Construct Arguments from Evidence (SEP) to explain the phenomenon and to articulate ideas on how to address the problem. In the Earth System Unit, the anchor phenomenon challenges students to take on the role of water resource engineers who are charged to investigate why East Ferris, a city on one side of the fictional Ferris Island, is prone to water shortages while a city on the other side of the island is not. While the physical existence of the location is fictional, water scarcity is a current environmental concern, so students are able to build an understanding of how to generate solutions to help protect the Earth's resources. This provides purpose and opportunity for students to engage in the learning that follows. For example, in Lesson 1.2 students engage in Obtaining, Evaluating, and Communicating Information (SEP) as they explore a text about water shortages and water solutions. Throughout the unit, additional supporting phenomena are presented, which also serve to provide the purpose and opportunity for student learning. Students engage in learning experiences that will ultimately help them to explain the anchor phenomenon as they seek to answer questions such as, "Why does more rain	

			form over West Ferris than East Ferris?" and "Why is more water vapor getting cold over West Ferris than East Ferris." For example, in Lesson 4.2, students use a simulation model to investigate how water vapor gets to different areas in the atmosphere. Students observe the movement of water vapor on different landscapes, discuss factors that may change the movement of water vapor, and then analyze one molecule of water vapor to observe its movements more closely. Students then create a model to further investigate how wind can affect the movement of water vapor, which then provides an opportunity for students to put more pieces of the puzzle together to then explore how wind and mountains can affect uneven rainfall patterns. The unit ends with students developing a freshwater collection system and discussing solutions to wastewater treatment. There is an opportunity for improvement in the approach to phenomena throughout the materials. For example, the materials often call for the teacher to visibly post a unit question prior to student exposure to a phenomenon, and often, unit and chapter questions or problems are identified for students. An embedded opportunity should be provided for students to first generate these (or similar) questions and problems on their own.	
Non-negotiable (only reviewed if Criteria 1 and 2 are met) **3. ALIGNMENT & ACCURACY:** Materials adequately address the [Louisiana Student Standards for Science](#). ☒ Yes ☐ No	**Required** **3a)** The majority of the Louisiana Student Standards for Science are incorporated, to the full **depth of the standards**.	**Yes**	100% (13 out of 13) Louisiana Students Standards for Science for Grade 5 are addressed to the full depth of the standards.	
	Required **3b)** Science content is **accurate**, reflecting the most current and widely accepted explanations.	**Yes**	The majority of the content is accurate and up-to-date, reflecting the most current and widely accepted explanations.	
	3c) In any one grade or course, instructional materials spend minimal time on content outside of the course, grade, or grade-band.	**Yes**	The instructional materials spend minimal time on content outside of the grade-band.	
Non-negotiable (only reviewed if Criteria 1 and 2 are met) **4. DISCIPLINARY LITERACY:**	**Required *Indicator for grades 4-12 only** **4a)** Students regularly engage with **authentic sources** that represent the language and style that is used and produced by scientists; e.g., journal excerpts, authentic	**Yes**	Students regularly engage with authentic sources that represent the language and style used and produced by scientists. The instructional materials incorporate a variety of authentic sources including science simulations, photographs, media content,	

Materials have students engage with authentic sources and incorporate speaking, reading, and writing to develop scientific literacy. ☒ Yes ☐ No	data, photographs, sections of lab reports, and media releases of current science research. Frequency of engagement with authentic sources should increase in higher grade levels and courses.		graphs, and articles. Students engage with authentic sources, similar to scientists, through the nonfiction readings that come into play throughout the units. For example, in the Patterns of Earth and Sky Unit, students read Star Scientist, which also provides students with opportunities to see photographs taken from space telescopes (pg. 6), see engineers working on a real-life space telescope to send into space (pg. 8), and to see graphs created from data sent to Earth by telescopes (pg. 11). Students interact with graphs and text to gain information related to various topics. In the Earth System Unit, Lesson 1.1, students read the Water Encyclopedia and analyze a graph that depicts amounts of water on Earth. In Lesson 1.2, students analyze a graph that depicts the population in East Ferris and then discuss how the water needs change depending on population growth. The materials include authentic photographs and simulations. For example, in the Modeling Matter Unit, Lesson 3.5, students observe a photograph of oil, vinegar and an emulsifier. Students discuss the photograph and infer ideas about the attraction of the ingredients. Within the same lesson, students use a simulation to model how the emulsifier affects the molecules at a nanoscale level. In addition, students also are exposed to simulations that serve as models for events that would not otherwise be observable in a Grade 5 classroom. In Chapter 4, Lesson 1 of the Earth Systems Unit, students grapple with understanding how water vapor moves in the atmosphere. During the simulation, students have to choose from various types of landforms and use the data they collect about water vapor to make inferences on why there is more rainfall on one side of the fictional Ferris Island than the other side.	

	Required **4b)** Students regularly engage in **speaking and writing** about scientific phenomena and engineering solutions using authentic science sources; e.g., authentic data, models, lab investigations, or journal excerpts. Materials address the necessity of using **scientific evidence** to support scientific ideas.	**Yes**	Students regularly engage in speaking and writing about scientific phenomena and engineering solutions using authentic sources. Materials address the necessity of using scientific evidence to support ideas. In a majority of chapters and throughout the units, students produce a written scientific explanation that details their understanding of the anchor and/or investigative phenomenon of the chapter or lesson. For example, in the Modeling Matter Unit, Lesson 1.10, students craft a written explanation of "[w]hy food coloring separated into dyes." Students learn about the characteristics that embody a strong scientific explanation (specifically including data) and even have an opportunity to revise their explanation after sharing and discussing it with peers. In the Ecosystem Restoration Unit, Lesson 1.4, students engage in discussing and writing a scientific argument based on evidence to answer the question "[h]ow do animals grow?" Students first work with a partner and then whole group to develop a claim with evidence after watching a video about otters. Within the same unit, in Lesson 1.8, 2.7 and 3.6, students engage in a discussion using a structure called "evidence circles" to discuss evidence and thoughts prior to working on a restoration plan.	
	Required **4c)** There is **variability** in the tasks that students are required to execute. For example, students are asked to produce solutions to problems, models of phenomena, explanations of theory development, and conclusions from investigations.	**Yes**	There is variability in the tasks that students are required to execute throughout the instructional materials. Students engage in a variety of tasks including making observations; making, writing, and supporting claims; using simulations to generate ideas and analyze data; and creating models. Students make models of phenomena at various points in the units. For example, in the Modeling Matter Unit, Lesson 3.6, students make a digital model of what they think a mixture of oil and vinegar would look like after lecithin is added. Students then evaluate peers' models and make improvements to their own based on the feedback given to them by their peers. In the Modeling Matter Unit, Lesson 2.2, students observe a simulation of molecules dissolving and generate questions to investigate. In Lesson 2.4, students draw a model of the molecules and write explanations. In the Ecosystem Restoration Unit, Lesson 3.1, students look at weather data to	

			determine why the cecropia trees are not thriving. Then they look at two different soil samples and draw a conclusion to determine what is in each soil sample and if it affects the growth of trees. Students take this information and make observations of the terrariums they built earlier in the unit. Students then determine if the living organisms in their terrarium are growing and thriving. Students take the information they have gathered from this unit to make conclusions from investigations.	
	4d) Materials provide a coherent sequence of authentic science sources that build scientific **vocabulary** and knowledge over the course of study. Vocabulary is addressed as needed in the materials but not taught in isolation of deeper scientific learning.	**No**	Vocabulary is presented throughout the unit as needed, but students are often told definitions and do not have the opportunity to create meanings for themselves. Often, students are frontloaded definitions and then participate in an isolated vocabulary activity of writing sentences or completing multiple meaning activities. For example in the Patterns of Earth and Sky Unit, Lesson 1.1, while introducing the artifact, the teacher tells students that they will act as an astronomer and then provides the definition, "An astronomer is a scientist who studies stars, planets, and other objects in the universe, but not Earth." The teacher posts the word on the vocabulary wall. Later in the chapter, (Lesson 1.6) students are presented with vocabulary from the vocabulary wall and asked to make sentences with the words. Although the sentences they create incorporate science ideas they have been learning, this activity is taught in isolation. This same approach is used throughout the materials. In the Modeling Matter Unit, Lesson 1.2, the teacher introduces the term "observe" and then provides the definition and uses the same approach for the term "properties." A vocabulary wall is used to reference the terms, and students are encouraged to use them during their investigations. Throughout the Investigation Notebook, students are guided through a Multiple Meaning Words activity in which students are introduced to words that have different meanings. The meanings or definitions of each word are provided to the students in a table. The students then determine which meaning the word has in the sentence provided. In The Earth System's Unit, students complete Word Relationships in their Investigative Notebook. Students write sentences from a list of	The Amplify Science program has a strong focus on learning academic language—both vocabulary and the ways of talking that are common to academic settings—with an emphasis on learning science vocabulary and scientific ways of talking. The program provides carefully scaffolded, authentic opportunities for students to learn and use scientific academic language as they investigate real-world problems, make arguments and explanations, and design solutions. For each Amplify Science unit, a carefully selected set of conceptually important words has been identified, and students get repeated exposure to these words through multiple modalities: reading, writing, listening, and student-to-student talk. Scientific vocabulary is introduced organically over the course of the unit through these multimodal activities rather than being "front loaded" at the beginning of a unit as a list of words to memorize. Example: Patterns of Earth and Sky unit (grade 5): The Investigation Question from prior lessons, "If stars are all around us, why can't we always see them?," continues to guide the activities of Lesson 1.6. To begin, students use the Think-Write-Pair-Share routine to discuss their ideas about why objects look smaller and less bright when they are farther away. Afterwards, students return to Handbook of Stars and Constellations book and also watch a short video to learn why stars aren't visible during daytime. Finally, students are introduced to the Word Relationships routine, in which they work with a group to create sentences that use at least two vocabulary cards in it. At least one sentence must

			vocabulary words to answer a question. This is done again in the Patterns of Earth and Sky Unit in the Investigative Notebook. Students answer a question in the Word Relationship activity to answer a question about patterns in the sky using specific vocabulary words.	help explain why we can't always see the stars, even though they are all around us. This routine allows students to communicate what they know about science words in their own way and to receive feedback from you and their peers. It also gives teachers an opportunity to use the ideas expressed by students during the group presentations as an authentic reason to post the newest key concept at which the class has arrived: The sun is the only star we can see in the daytime because the sun looks so bright. By practicing using the vocabulary words with their peers and seeing how their work contributed to the posted key concept, students are better prepared to write a scientific explanation at the conclusion of the chapter in the next lesson. Therefore, while the Word Relationships routine is a discrete activity, it contributes to the overall progression of the unit and is indeed connected to the activities before and after it, just like all other Amplify Science activities. Furthermore, students will be exposed to unit vocabulary words many times, in many ways, to help them develop flexible word knowledge.
Section II: Additional Criteria of Superior Quality				
5. LEARNING PROGRESSIONS: The materials adequately address Appendix A: Learning Progressions. They are coherent and provide natural connections to other performance expectations including science and engineering practices, crosscutting concepts, and disciplinary core ideas; the content complements the the Louisiana Student Standards for Math. ☒ Yes ☐ No	**Required** **5a)** The overall organization of the materials and the development of disciplinary core ideas, science and engineering practices, and crosscutting concepts are coherent within and across units. The **progression of learning** is coordinated over time, clear and organized to prevent student misunderstanding and supports student mastery of the performance expectations.	**Yes**	The lessons within and across each unit are organized to support learning through a natural progression. Students engage with and build an understanding of the three dimensions of the standards at increasing levels of complexity and sophistication, and engage in a coherent progression of learning that is coordinated over time, clear, and organized. Within the first unit, Patterns of Earth and Sky, students progress toward Performance Expectations through various experiences. Students begin the unit by developing the understanding that the sun looks bigger and brighter than all of the other stars because it is much closer to Earth. Next, the students learn that the sky changes throughout the day because the Earth spins, leading up to the concept that the stars they see in the night sky change throughout the year because the Earth orbits the sun. This learning progression builds to and supports the anchor phenomenon of an observed artifact that depicts the sky differently during different times. The students develop 3D	

			learning through observing and investigating patterns in the day and night sky with various simulated models, and informational text. Through these activities, students develop a sense of scale and proportion of the Earth, sun, stars, and discover patterns of the stars. Across units, students build an understanding of three-dimensional learning as elements of 3D learning are first introduced and then built upon with complexity as students move through the units. Students begin focusing on Cause and Effect (CCC) relationships that help build an understanding of yearly Patterns (CCC) observed in the night sky. They begin to utilize simulation Models (SEP) to Investigate (SEP) these connections and gather evidence to make claims and support their ideas (SEP, Engage in Argument with Evidence) about the stars. As the students move onto the next unit, Modeling Matter, students build off their initial ideas about Scale and Proportion (CCC) on a large scale to understanding it on a much smaller scale when learning about the properties of matter at the nanoscale versus the observable scale learned in the prior unit. Students move from simulated Models (SEP) to hands on Investigations (SEP) when learning about substances and matter. As students move to the Earth System, they build an even deeper understanding of the properties of matter and chemical reactions, and then move onto Earth system interactions, water distribution, and the impacts that humans have on the environment, while utilizing Math Computational Skills (SEP) and developing an understanding of Systems and System Models (CCC). Finally, in the Ecosystem Restoration Unit, students build on the concept of human impact on the environment, as well as the movement of matter and energy. This leads to Engaging in Argument from Evidence (SEP) in order to figure out why an ecosystem is failing and how to stop it by Designing a Solution (SEP) to the problem.	

	5b) Students apply mathematical thinking when applicable. They are not introduced to math skills that are beyond the applicable grade's expectations in the Louisiana Student Standards for Mathematics. Preferably, **math connections** are made explicit through clear references to the math standards, specifically in teacher materials.	**Yes**	Students apply mathematical thinking when applicable. When utilizing the Scale Tool Simulation used in multiple units, students see the "relative differences in size and scale of a wide variety of objects ranging from the solar system to subatomic particles." In the Ecosystem Restoration Unit, Lesson 1.3, the tool measures items by using the powers of 10 and allows students to observe size and scale in this way as they scroll through the tool. In the Earth Systems Unit, students observe and analyze data that helps generate ideas for creating a freshwater collection system. Students also measure their results in their system which helps students improve their design. In the Modeling Matter Unit, students measure various substances as they engage in hands on investigations that help students understand different properties of matter. Students also use mathematical skills when considered total mass of a mixture remains the same even when one substance dissolves.	
6. SCAFFOLDING AND SUPPORT: Materials provide teachers with guidance to build their own knowledge and to give all students extensive opportunities and support to explore key concepts using multiple, varied experiences to build scientific thinking. ☒ Yes ☐ No	**Required** **6a)** There are separate **teacher support** materials including: scientific background knowledge, support in three-dimensional learning, learning progressions, common student misconceptions and suggestions to address them, guidance targeting speaking and writing in the science classroom (e.g. conversation guides, sample scripts, rubrics, exemplar student responses).	**Yes**	There are separate teacher support materials provided. Support materials within each lesson include scientific background knowledge, support in three-dimensional learning, learning progressions, common student misconceptions and suggestions to address them, guidance targeting speaking, and writing in the science classroom. Each unit provides resources for planning the unit. The Unit Overview describes what students should figure out, why they should figure it out, and how they figure it out by the end of the unit. The Unit Map describes what students figure out and how for each Chapter. The Progression Build describes how the phenomena build on the learning throughout each unit. The Materials and Preparations section provides information on what materials are needed for each activity and how the teacher needs to prepare for each of these activities. The Science Background section provides background information about the DCIs, SEPs, and CCCs addressed in the unit. The Standards at a Glance section lists the Student Standards for Science, ELA, and Math addressed in the unit. A Teacher Reference Section includes Lesson Overview Compilation, Standards and Goals, 3-D	

			Statements, Assessment System, Embedded Formative Assessments, Books in This Unit, Apps in This Unit, and Flextensions in This Unit. Each lesson provides an Overview, Differentiation strategies, Materials and Preparation, and Standards specific to that lesson. Each unit includes a Teacher's Guide with all of the above components, along with other resources to help the teacher prepare for and teach each unit.	
	6b) Appropriate suggestions and materials are provided for **differentiated instruction** supporting varying student needs at the unit and lesson level (e.g., alternative teaching approaches, pacing, instructional delivery options, suggestions for addressing common student difficulties to meet standards, etc.).	**Yes**	Appropriate suggestions and materials are provided for differentiated instruction to support varying student needs at the unit and lesson level. Each lesson includes a section titled Differentiated Instruction. Within this section, suggestions are given for students struggling, English Learners, and those who need an extension. In the Ecosystems Restoration Unit, Lesson 1.2, differentiation strategies for Visual Representation are recommended suggesting that "the Rainforest Problem Slideshow provides a highly visual and engaging introduction to the problem that students will be working to solve throughout the unit." A multimodal instructional approach is used in the unit to provide students with "many opportunities to make sense of concepts and provides access points for different types of learners." The materials also provide a suggestion for teachers to work with a small group of students who need support in observing the illustrations of the three different ecosystems in their notebook for Activity 3. Suggestions for students that need a challenge are also provided. This gives the suggestion for students to go back and record how ecosystems in Activity 3 are similar and different.	
7. USABILITY: Materials are easily accessible, promote safety in the science classroom, and are viable for implementation given the length of a school year. ☒ Yes ☐ No	**Required** **7a)** Text sets (when applicable), laboratory, and other scientific materials are **readily accessible** through vendor packaging.	**Yes**	Text sets, laboratory, and other scientific materials are readily accessible through vendor packaging. Students have access to student apps and text through the digital platform. Each unit contains an Investigation Notebook which contains needed materials for the unit. Each unit incorporates reference books into the lesson which are accessible as eBooks. The packaged kits are also available for purchase.	
	Required	**Yes**	Materials help students build an understanding of standard operating procedures in a science laboratory and include safety guidelines,	

	7b) Materials help students build an understanding of standard operating procedures in a science laboratory and include **safety** guidelines, procedures, and equipment. Science classroom and laboratory safety guidelines are embedded in the curriculum.		procedures, and equipment. Science classroom and laboratory safety guidelines are embedded in the curriculum. For example, within the Investigation Notebook for each unit, safety guidelines are addressed on page 1. Safety notes such as "Don't taste things" are given. Additional safety notes are located within the lessons, as needed. For example, in the Earth System Unit, Lesson 2.7, prior to building fresh water systems, a safety note is included to remind students to be careful using the clear wrap box due to the sharp cutting edge. Each lesson provides a materials list and instructions or suggestions for preparing these materials for each lesson.	
	7c) The total amount of content is **viable** for a school year.	**Yes**	The total amount of content is viable for a school year. The instructional materials contain four units with twenty-two to twenty-six lessons each. Each lesson contains sixty minutes of instructional time.	
8. ASSESSMENT: Materials offer assessment opportunities that genuinely measure progress and elicit direct, observable evidence of the degree to which students can independently demonstrate the assessed standards. ☒ Yes ☐ No	**Required** **8a) Multiple types** of formative and summative assessments (performance-based tasks, questions, research, investigations, and projects) are embedded into content materials and assess the learning targets.	**Yes**	Multiple types of formative and summative assessments are embedded and assess the learning targets. Formative assessments such as pre-unit assessments, On-The-Fly assessments, self-assessments, and critical juncture writing assessments are included in each unit. End-of-Unit Assessments and rubrics are also provided. For example, in the Ecosystem Restoration Unit, Lesson 1.1, students write about problems that may exist within the ecosystem. In Lesson 1.3, students synthesize ideas after reading and discussing a text to answer the question "How do animals grow?" These formative assessments build to the summative assessment at the end of the unit in Lesson 3.7 where students complete a food web diagram and complete an argument answering the question, "Why aren't snakes growing and thriving in the forest Ecosystem?" In the Patterns of the Sky Unit, two End-of-Unit Assessments are available to assess student mastery of the standards. The first End-of-Unit Assessment, in Lesson 3.6, asks students questions that are based on the anchor phenomena introduced at the beginning of the unit. Students are also asked how the pull of gravity affects people in different parts of the earth. On the second End-of-Unit Assessment, in Lesson 4.3, students finish designing and investigating a question they have posed which is based on scientific evidence acquired	

			throughout the unit. The summative assessments have minimal questions and do not assess all the learning targets taught within the units. For example, the End-of-Unit Writing, in Patterns of Earth and Sky, includes 4 parts with a total of 8 questions, with LSSM 5-ESS1-2 not assessed to the full depth of the standard.	
	Required **8b)** Assessment items and tasks are structured on integration of the **three-dimensions**.	**Yes**	Assessments items and tasks are structured on the integration of the three-dimensions. In the Patterns of the Sky Unit, Lesson 3.6, the summative assessment provides opportunities for students to assess their knowledge of the three dimensions. In the End-of-Unit Writing, Explaining the Artifact, Part 3, Question 1, states, "Why does the nighttime section of the artifact show other stars in the sky, but not the sun?" Within the questions, students are assessed on the SEP, Analyzing and Interpreting Data, as they are called to analyze the pictures of an artifact first introduced as the anchor phenomenon to answer the question provided. The End-of-Unit Writing assesses the student's knowledge of the DCI (UE.ESS1B.a) as well as the student's understanding of observable patterns (CCC) that occur because of how the Earth orbits around the sun. Furthermore, the CCC, Patterns, is addressed through the observable pattern of the day and night sky. In the Ecosystem Restorations Unit, Lesson 3.4, students use the Ecosystem Restoration Simulation to answer questions from pages 68-69 of the Investigative Notebook as they work through the simulations. Students are asked, "In the Simulation ecosystem, what is the connection between the plants and mushrooms?" This question is three dimensional addressing the SEP, Developing and Using Models. The simulation is a model. The DCI, Energy in Chemical Processes and Everyday Life (UE.PS3D.b) and the CCC, Energy and Matter, are assessed as students use the simulation to link the connection of plants and mushrooms in an ecosystem. Students demonstrate an understanding that Energy (CCC), that once came from the sun, and Matter is moved through the ecosystem from the plant to mushroom and mushroom to plant (DCI).	

	8c) Scoring guidelines and rubrics **align** to performance expectations, and incorporate criteria that are specific, observable, and measurable.	**Yes**	Scoring guidelines and rubrics align to performance expectations and incorporate criteria that are specific, observable, and measurable. Student Look Fors and Possible Student Responses are given to guide teachers in their assessment of student understanding. In the Modeling Matter Unit, Lesson 2.2, students use the simulation to find solid and liquid particles that mix. Under the teacher support tab, possible student responses and Look Fors are given. In Lesson 3.7, students write their final explanations answering the unit question. An Assessment Guide is included with three different rubrics assessing the CCC, DCI, and SEP within the unit.	
FINAL EVALUATION ***Tier 1 ratings*** receive a "Yes" for all Non-negotiable Criteria and a "Yes" for each of the Additional Criteria of Superior Quality. ***Tier 2 ratings*** receive a "Yes" for all Non-negotiable Criteria, but at least one "No" for the Additional Criteria of Superior Quality. ***Tier 3 ratings*** receive a "No" for at least one of the Non-negotiable Criteria.				
Compile the results for Sections I and II to make a final decision for the material under review.				
Section	**Criteria**	**Yes/No**	**Final Justification/Comments**	
I: Non-negotiable Criteria of Superior Quality[2]	1. Three-dimensional Learning	**Yes**	The materials are designed so that students develop scientific content knowledge and scientific skills through interacting with the three dimensions of the science standards. The majority of the materials integrate the Science and Engineering Practices, Crosscutting Concepts, and Disciplinary Core Ideas to support deeper learning.	
	2. Phenomenon-Based Instruction	**Yes**	Observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning a majority of the time.	
	3. Alignment & Accuracy	**Yes**	Each of the Louisiana Students Standards for Science in Grade 5 are incorporated into the full depth of the standards. The content is accurate and up to date reflecting the most current and widely accepted explanations. Minimal time is spent on content that is outside of the grade band.	

[2] Must score a "Yes" for all Non-negotiable Criteria to receive a Tier I or Tier II rating.

	4. Disciplinary Literacy	**Yes**	Students have multiple opportunities to engage with authentic resources and are encouraged to speak and write about scientific phenomenon and engineering solutions with an emphasis on using scientific data to support scientific ideas.	
II: Additional Criteria of Superior Quality[3]	5. Learning Progressions	**Yes**	The overall organization of the materials supports student mastery of the standards. The progression of learning for the Disciplinary Core Ideas are coherent and organized to ensure student mastery.	
	6. Scaffolding and Support	**Yes**	There are separate teacher support materials and appropriate suggestions for multiple types of learners within the materials.	
	7. Usability	**Yes**	Text sets, laboratory, and other scientific materials are readily accessible through vendor packaging. Safety notes and guidelines are embedded within the curriculum and a viable amount of material is provided to be completed within the school year.	
	8. Assessment	**Yes**	Formative and summative assessments that assess the learning targets are included within the curriculum. Assessment tasks are structured on the integration of the three-dimensions and the scoring guidelines align to performance expectations.	
FINAL DECISION FOR THIS MATERIAL: **Tier I, Exemplifies quality**				

[3] Must score a "Yes" for all Additional Criteria of Superior Quality to receive a Tier I rating.

Appendix II.

Public Comments

There were no public comments submitted.