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: **Building Blocks of Science 3D**

Grade/Course: **K-5**

Publisher: **Carolina Biological Supply Company**

Copyright: **2019**

Overall Rating: **Tier II, Approaching quality**

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

STRONG	WEAK
1. Three-dimensional Learning (Non-Negotiable)	5. Learning Progressions
2. Phenomenon-Based Instruction (Non-Negotiable)	
3. Alignment Accuracy (Non-Negotiable)	
4. Disciplinary Literacy (Non-Negotiable)	
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 received a "Yes" for all Criteria 1-8.
Tier 2 ratings received a "Yes" for all non-negotiable criteria, but at least one "No" for the remaining criteria.
Tier 3 ratings received a "No" for at least one of the non-negotiable criteria.

Click below for complete grade-level reviews:

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

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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, 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 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 (SEP), crosscutting concepts (CCC), and disciplinary core ideas (DCI) to support deeper learning. For example, in the Weather and Sky unit (pages 112-133), students engage in the SEP, “Planning and Carrying Out Investigations,” to test the sun’s effect (CCC) on Earth’s surfaces (DCI LE.PS3B.a). In the “Push, Pull, and Go” unit (pages 37-38), instructional materials prompt the teacher to encourage students to think about and discuss forces that can make a ball move. Students engage in the SEP, “Planning and Carrying Out Investigations,” by rolling a ball across the floor. Students make observations to identify patterns (CCC) in motion such as more force or a harder push equals greater speed (DCI LE.PS3C.a). In the “Living Things and Their Needs” unit, Lesson 1, the three dimensions are

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			integrated across a series of investigations to support deeper learning. In “Investigation A” (page 34), students build understanding of what plants and animals need to survive (DCI LE.LS1C.a) through the CCC of Patterns. Students look for and discuss patterns in characteristics of living and nonliving things through examination of a series of photo cards guided by questions including, “What do all living things do?” and “What do all living things need to live?” In “Investigation B” (page 35), students plant a pumpkin seed and begin a plant journal in which they will record observations as it develops into a plant. The teacher asks students if seeds are living things and challenges them to provide evidence for how they know (SEP “Engaging in Argument from Evidence”). Learners further engage with this SEP through a sensemaking discussion that encourages students to make a claim about plant growth and to support their claim with evidence and reasoning (“Teaching Tip,” page 36).
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**	Although improvement is needed, a majority of the time, observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning. For each unit, the instructional materials identify a descriptive narrative and short online video as the anchor phenomenon. While these videos and descriptive narratives offer exposure to

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			scientific content, they do not serve as anchoring phenomena that are puzzling, complex experiences driving the learning that follows. While phenomenon-based learning is not evidenced at an anchoring level, at an investigative level, phenomena serve to provide the purpose and opportunity for learning across the majority of lessons. Each lesson begins with a paragraph for the teacher to read aloud to students. Although lacking in variety of format, a majority of the presented investigative phenomena adequately provides an opportunity for learning. For example, in the “Push, Pull, Go” unit, Lesson 1, the teacher opens with a quick story about friends playing catch with a ball. One friend misses the ball and both observe the ball continue rolling, increasing in speed as it rolls down a hill (page 32). Students consider what this makes them wonder. Anticipated questions include, “Why did the ball keep rolling? Why did the ball roll fast? Why did the ball stop?” Students build understanding to construct explanation for their questions about the ball’s motion through the series of investigations that follow. This is accomplished as students roll a ball down a ramp to identify patterns in motion such as a push sets the ball in motion, hitting a shoe makes it stop or change direction,

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			and increasing the height of the ramp makes the ball roll farther and faster. Students identify a faster moving ball as having more energy. As another example, in the “Weather and Sky” unit, Lesson 3, students are presented with a scenario in which students on a playground suddenly see dark clouds roll in, feel the wind increase, and hear thunder. The teacher in the scenario calls the students inside. This sets the stage for students to wonder, “Why did we have to leave the playground and go in? Why did I hear thunder? Is thunder dangerous?” (page 86). Students build understanding through a hands-on investigation to determine what happens when it rains too hard and too fast for the ground to absorb the water, the dangers of flooding, and how to stay safe during flooding (pages 92-93).
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**	A majority, 8 out of 10 or 80%, of "Louisiana Student Standards" for grade K Science are incorporated to the full depth of the standard. The two standards not covered to their full depth are K-ESS2-2 and K-ESS3-1 LSS K-ESS2-2 is not addressed to the full depth of the standard. This standard requires that students construct an argument supported by evidence for how plants and animals (including humans) can

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			change the environment to meet their needs. The "Lessons Overview" (page xxvii) references this standard in Lesson 3 of the "Living Things and Their Needs" unit. In Lesson 3, students successfully make observations to provide evidence to support the argument (SEP) that living things change their environment (DCI). However, no mention of systems and system models is made within the unit; therefore, the crosscutting concept is not addressed. LSS K-ESS3-1 is not addressed to the full depth of the standard. This standard requires that students use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live. While the "Lessons Overview" (page xxvii) references this standard in Lesson 3 of the "Living Things and Their Needs" unit, the primary focus is how living things change their environment. Little is mentioned of how the environment provides resources for living things which is a requirement of the DCI. Additionally, students do not make models to represent the relationship between needs (SEP) and the systemic link between living things and resources is not made (CCC). No other mention of system and system models is made in this unit.

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			Examples of standards covered in full depth include the "Weather and Sky" unit, Lesson 1 (page 1) which addresses K-ESS2-1. Students develop a chart to share their ideas about weather and begin building an age-appropriate understanding of Earth's place in the universe (DCI). Students predict weather conditions and objects that can be observed in the daytime sky and then go outside to record their observations (SEP). Students identify and sort daytime and nighttime weather conditions and objects in the sky to discuss patterns among them. (CCC). In the "Living Things and Their Needs" unit, Lesson 4 (page 83), LSS K-ESS3-3 is addressed. Students review the needs of living things and how living things change the environment and monitor and collect data about pumpkin plants to draw conclusions about their growth. In "Investigation B" students observe a bean plant to collect evidence of the similarities and differences between plant parents and plant offspring (DCI). In "Investigation D" students design solutions to reduce human impact on the local environment (CCC). Students discuss ways that humans impact their local environment in "Investigation C" (SEP).
	REQUIRED **3b)** Science content is **accurate**, reflecting the most current and widely accepted explanations.	**Yes**	All reviewed content was accurate, up-to-date and aligned with the most current and widely accepted explanations. No

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			evidence could be found of incorrect or out-of-date science 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 course or grade-band. 83% or 10 of 12 standards addressed focus on Louisiana Student Standards for grade K. Two of the standards that do not fall within the Louisiana standards are K-2 ETS 1-1 and K-2 ETS 1-2. The "Engineering and Technology" standards are included in the program; however, they enhance teaching and learning and do not distract from the overall learning target.
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. Materials address the necessity of using scientific evidence to support scientific ideas. For example, in the "Living Things and Their Needs" unit (page 32) students make a plant journal and use multiple copies of this sheet to record their observations of their germinating seeds.

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			In the “Weather and Sky” unit (page 113), students first discuss with a partner how to investigate the effects the sun has on soil, sand, gravel, and water. Then students work together to design a solution to block the sun from heating a surface, the sand at the beach, so that they can stay at the beach longer. Students record and provide a written explanation of how their design works on “Student Investigation, Sheet 5B.” After testing their design, students share challenges and results with other class members (page 130). In the “Push, Pull, Go” unit (page 94), students work together to invent a system in which a ball is used to knock down a series of dominoes. Students discuss and plan their invention together, then conduct tests to gauge its effectiveness, making design adjustments as needed. Students increase the challenge by adding a ramp to their invention to make the ball roll faster. Students provide written description of their invention on “Student Investigation Sheet 5A.” Finally, students share their inventions with each other, discussing the challenges they faced and modifications they used to overcome those challenges.

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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 are asked to produce solutions to problems, models of phenomena, explanations of theory development, and conclusions from investigations. In the “Push, Pull, Go” unit (page 76), students build a toy top to model movement and support the idea that the force applied to an object affects its speed and the direction in which it moves. In the “Living Things and Their Needs” unit (page 39), students observe, discuss and use explanations to identify patterns they notice between the “bessbug” and other insects they have seen. In the “Weather and Sky” unit (page 95), students use a tornado model to demonstrate the speed of the winds in a tornado.
	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.	**Yes**	Materials provide a coherent sequence of authentic science sources that build scientific vocabulary and knowledge over the course of study. For example, in the “Weather and Sky” unit (page 91), students are introduced to the term “hazard” as they begin a study on dangerous weather. Students discuss examples of dangerous weather and problems it causes humans, then students

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			investigate floods and tornadoes and design a safety poster. These activities help students gain an understanding of “hazards” over the course of study. In the “Living Things and Their Needs” unit (page 35), students are introduced to the term “habitat” as they describe the habitat of a bessbug. In the “Push, Pull, Go” unit (page 65), the vocabulary words listed are “force,” “gravity,” and “motion.” The teacher introduces the vocabulary words when she gives the background information on “Dominoes in Motion.” Additionally, strategies for vocabulary development are provided in each unit. For example, students can use the “Word Wall” strategy to post and label the equipment they will be using during a unit. Students can also use the “Say-Then-Write” strategy which enables them to use the academic vocabulary of science in both oral and written forms. A specific reference can be found in the “Living Things and Their Needs” unit (page xiv).
SECTION II: ADDITIONAL INDICATORS OF QUALITY			
Additional Criterion **5. LEARNING PROGRESSIONS:** The materials adequately address [Appendix A: Learning Progressions](). They are coherent and provide	**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**	**No**	The progression of learning is not coordinated and organized over time in a manner that supports student mastery of the performance expectations. The instructional units fail to include enough

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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	**learning** is coordinated over time, clear and organized to prevent student misunderstanding and supports student mastery of the performance expectations.		material for engaging students in robust three-dimensional science instruction over the progression of a full school year; therefore, students do not have an adequate amount of learning opportunities to fully engage with the grade level standards to build the understanding and proficiencies required to master the associated performance expectations. See indicator 7c.
	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 applicable grade's expectations in the "Louisiana Student Standards for Mathematics." In the "Push, Pull, Go" unit (page 42), students use "Unifix Cubes" to build a ramp, count, sort and measure which relates to Louisiana math standards K.CC.A.3, K.CC.B.5, K.CC.C.6, K.MD.A.1, K.MD.A.2, and K.MD.B.3 In the "Living Things and Their Needs" unit, Lesson 2 (page 58), students use paper clips to measure the height of pumpkin plants and enter the information on a "Plant Data Sheet," which relates to Louisiana math standard K.MD.A.2.
Additional Criterion **6. SCAFFOLDING AND SUPPORT:** Materials provide teachers with guidance to build their own knowledge and to give all students	**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	Yes	There are separate teacher support materials including scientific background knowledge, support in three-dimensional learning, learning progressions, common student misconceptions and suggestions to

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extensive opportunities and support to explore key concepts using multiple, varied experiences to build scientific thinking. ☒ Yes ☐ No	address them, guidance targeting speaking and writing in the science classroom (i.e. conversation guides, sample scripts, rubrics, exemplar student responses).		address them, guidance targeting speaking and writing in the science classroom. Each unit has a teacher's guide complete with instructions on how to navigate the guide. There are additional features included such as lesson overview charts, guides to instructional scaffolding, teacher preparation, background information, "NGSS Standards" by lesson, "Literacy and Digital Components," and summative assessment. For an example of a teacher's guide see the unit on "Exploring Organisms" (page i). In the "Living Things and Their Needs" unit (page 33), teachers are provided with background knowledge on the "bessbugs" that students will be handling and studying in class. In the "Weather and Sky" unit, "Teacher Tips" help teachers address the three-dimensions. For example, one "Teacher Tip" (page 40), suggests that teachers encourage students to give reasoning for their placement of sticky notes on a chart in order to introduce the scientific practice of making claims and providing evidence. Another "Teacher Tip" (page 112) suggests that teachers chart the daily morning and afternoon temperatures in their area for a period of time in order to identify temperature patterns (CCC) in their local area.

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			Student exemplars are provided for all class discussions and activities to guide teachers in targeting speaking and writing. For example, in the "Push, Pull, and Go" unit (page 54), the student exemplar, "Students should explain that more force made the swing move faster," is provided in response to the teacher question, "How did you make the swing move faster?" Another exemplar (page 80), "With more force, the top spins faster and for a longer time before stopping," is provided in response to the teacher question, "What happens if we use more force to launch the top?"
	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 supporting varying student needs at the unit and lesson level. For example, "Differentiation Strategies" are called out and described (page xiv-xv) of each unit. Suggested strategies include, "Tiered Instruction," "Technology," "Task Stations," "Sense Learning," and "Think-Pair-Share." Strategy descriptors suggest multiple ways teachers can plan for differentiation. For example, the descriptor for "Think-Pair-Share" suggests that teachers allow time for students to think and write about difficult topics. Then pair students by skill level and allow them time to discuss their ideas with another

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			student before sharing in a whole class discussion. For example, in the “Push, Pull, Go” unit (page 32) a differentiation strategy is called out in the margin of the teacher’s guide suggesting that teachers help students struggling with new vocabulary terms “motion” and “force” by creating a working definition that relates a movement to the word. In the “Weather and Sky” unit (page 35) a differentiation strategy is called out in the margin of the teacher’s guide suggesting use of a “KLEWS” chart to help students formulate claims and evidence for their ideas throughout the unit. A brief description of a “KLEWS” chart is included along with a reference of where teachers can go to find out more about it. In the “Living Things and Their Needs” unit (page 37) a differentiation strategy states, “To provide support for the idea that living things can be grouped, encourage students to categorize objects in the classroom. Direct students to identify characteristics, such as color, size, or material, that can be used to group objects.”
Additional Criterion **7. USABILITY:** Materials are easily accessible, promote safety in the science classroom, and are viable for	**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. The materials, including the teacher’s manual are accessible online and downloadable as PDF’s. The material

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implementation given the length of a school year. ☒ Yes ☐ No			laboratory kits can be purchased from the company. In the "Living Things and Their Needs" unit (page xxxi) the kit materials are outlined in a chart showing quantities supplied and what lessons the item are used in. If students go to the "New BBS 3D Platform" they can access online resources on the "Push, Pull, Go" unit such as a simulation to "Count, Sort, and Build" or one to simulate the lesson on dominoes tumbling. For example, in the "Weather and Sky" unit (page 117) the "Literacy Article 4C, Hello Sun," is provided to help students gain an understanding of how the sun's heat affects Earth's surface. In the "Push, Pull, and Go" unit (page 72) "Literacy Article 3A, Falling Tree," helps students understand how weather affects objects on Earth. In the "Living Things and Their Needs" unit (page 81) "Literacy Article 3B, A Call for Help," is provided to help students understand how living things depend on their environment. Laboratory sheets are also available in each unit. For example, in the "Weather and Sky" unit (page 72) "Student Investigation, Sheet 2B" is provided for students to model precipitation. In the "Push, Pull, and Go" unit (page 73) "Student Investigation, Sheet 3B" is provided for students to illustrate what happens to a line of dominos when a force

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			is applied to one domino in the row. In the "Living Things and Their Needs" unit (page 96) a "Plant Data Sheet" is provided for students to record observations about their pumpkin plant.
	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. Safety guidelines are embedded in the curriculum. For example, each unit includes strategies for establishing safety procedures in the classroom or science lab (page xvii). A safety contract is also included (page xviii). In the "Weather and Sky" unit, the teacher's guide (page xvii) addresses safety. "Safety Data Sheets" are available through the company website and are designated in the materials list when required for use in a lesson. A "Safety Rules for the Science" lab chart is available for discussion and display in the classroom and there is a safety contract for students to sign. In the "Living Things and Their Needs" unit (page xvii), a list of laboratory safety rules is included- such as tie back your hair, tuck in loose clothes, and listen for instructions before beginning an experiment. Additional safety procedures are called out as needed within lessons. For example, in

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			the “Weather and Sky” unit (page 36) a safety tip is called out advising teachers to remind students not to look directly at the sun because it can damage their eyesight. In the “Living Things and Their Needs” unit (page 45) a safety tip is called out on the “Take Home Science Activity Sheet, The Seeds We Eat” suggesting that teachers remind students that they should ask an adult before eating any seeds as some are safe to eat while others are not.
	7c) The total amount of content is **viable** for a school year.	**No**	The total amount of content is not viable for the school year. The instructional materials contain 3 units. The “Push, Pull, Go” and “Weather and Sky” units contain 5 lessons each and the “Living Things and Their Needs” unit includes 4 lessons. The content provided through these 14 lessons is inadequate to provide robust science instruction that involves students in doing science for the full length of the school year. The “180-Day Instructional Pacing Guide” provides guidance on pacing of content by indicating what should be taught each day. To expand the 14 lessons across the school year, the pacing guide devotes approximately half of the total daily science experiences to the extension activities, digital simulations, “Tell Me More” responses, and literacy articles. For example, in the “Push, Pull, Go” unit, Lesson 2, “Push, Pull, Swing,” the “Swing Set” digital simulation allows students to

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			observe the motion of the swing by pressing "pull" or "push." In Lesson 3, "Tell Me More" (page 68), students respond to the following prompt, "Make a prediction about the movement of the dominoes If we carefully lined up all the dominoes in this room and pushed the first one, then _____." A full day's science instruction is an excessive amount of time to allot for such components, which are supplemental in nature and designed to be used at the teacher's discretion. There is not enough material to provide an academic year of quality science instruction for students. This is a missed opportunity to provide additional student learning experiences that support mastery of the performance expectations of the grade level.
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. Summative assessments and answer keys are available at the end of each unit. Students can take the summative assessments online in "BBS-3D." Summative assessment remediation strategies charts are also available. In the "Living Things and Their Needs" unit (page 51), the "Teacher Preparation" section tells teachers in "Investigation A"

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			to make a copy of the "Assessment Observation Sheet" and during the investigations use the questions and prompts to formatively assess students as they work. "General Rubrics" are available in "Appendix A" which can be used to assess individual progress. Furthermore, each unit includes "Tell Me More" questions at the end of each lesson such as the "Weather and Sky" unit (page 58) in which students are asked to put the words "cool," "warm," "cold," and "hot" in order from lowest temperature to highest temperature. These questions provide teachers with an opportunity to formatively assess student understanding of the concepts taught in the lesson. Additionally, student "Investigation Sheets" are embedded within each lesson such as "Student Investigation, Sheet 3.B" found in the "Push, Pull Go" unit (page 74) which formatively assessing students ability to explain how dominoes move after a push.
	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. Each unit has a summative assessment that helps to evaluate student understanding of key unit concepts. The summative assessment at the end of the "Weather and Sky" unit is structured on the application of the three dimensions. For example, "Item 7" states, "You take a

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			ball outside. You put it in the Sun. What happens?” This challenges students to demonstrate understanding of how sunlight warms Earth’s surface (LE.PS3B.A) and apply the “Crosscutting Concept” of “Cause and Effect.” The summative assessment at the end of the “Push, Pull, Go” unit is also structured around the three dimensions. For example, “Item 1” states, “A ball is rolling down a hill. You push the ball up the hill. What happened? A. The ball changed direction, B. The ball tumbled dominos, C. The ball stopped.” To answer this question, students apply their understanding of how a push applied to a moving object affects (CCC) the direction it moves (LE.PS2A.b).
	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. A general rubric is provided to assess students’ performance throughout each unit. For example, the “Living Things and Their Needs” unit, “Appendix A” has a general rubric that measures exploration, vocabulary, concept building and the science notebook. A similar rubric is found in the “Push, Pull, Go” unit (page 152). “Assessment Observation Sheets” at the end of each lesson provide criteria for teachers to look for during student

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			discussion and exploration activities. For example, in the “Weather and Sky” unit (page 90), the “Assessment Observation Sheet” includes criteria such as, “Can students directly describe the weather using direct observation? Do they accurately record weather observations?,” which align with performance expectation K-ESS2-1. These criteria are specific, observable, and measurable and help teachers access student progress in mastering content. The instructional materials provide scoring guides for the summative assessments at the end of each unit. The “Push, Pull, Go” unit (page 109-111), provides an example of such. Each guide includes a chart that shows which performance expectation is addressed by each item of the summative assessment. Additionally, the chart also identifies which lesson should be revisited for remediation purposes for each summative assessment item.

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**	Students have multiple opportunities throughout each unit to demonstrate application of the three dimensions. The three dimensions are most often

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			integrated with one another to support a deeper learning of the performance expectations
	2. Phenomenon-Based Instruction	**Yes**	Although improvement is needed, a majority of the time, observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning. Investigative phenomenon at the lesson level are used to engage students and drive learning for the lesson. Investigative phenomena are related across the unit but could be improved by linking to a larger overarching anchor phenomena.
	3. Alignment & Accuracy	**Yes**	80% (8 out of 10) of the "Louisiana Student Standards" for grade K are appropriately addressed by the instructional materials and minimal time is spent on content that is outside of the course.
	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.
II: Additional Indicators of Quality	5. Learning Progressions	**No**	The instructional materials do not provide a sufficient amount of instructional opportunities for engaging students in robust three-dimensional science instruction over the progression of a full school year.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
	6. Scaffolding and Support	**Yes**	There are separate teacher support materials which build teacher knowledge and assist them in providing students with robust, varied learning opportunities to deepen conceptual understanding and develop scientific thinking.
	7. Usability	**Yes**	Text sets, laboratory, and other scientific materials are readily accessible both digitally and through vendor packaging. The laboratory kits are outlined in the unit overview and can be purchased from the company. Each unit includes strategies for establishing safety procedures in the classroom or science lab. However, additional materials and learning opportunities should be included to make the program viable for a school year.
	8. Assessment	**Yes**	Multiple types of formative and summative assessments are embedded in the instructional units. The assessments include items and tasks designed to measure student mastery of learning targets across the three dimensions.
FINAL DECISION FOR THIS MATERIAL: **Tier II, Approaching 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: **Building Blocks of Science 3D** Grade/Course: **1**

Publisher: **Carolina Biological Supply Company** Copyright: **2019**

Overall Rating: **Tier II, Approaching quality**

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

STRONG	WEAK
1. Three-dimensional Learning (Non-Negotiable)	5. Learning Progressions
2. Phenomenon-Based Instruction (Non-Negotiable)	
3. Alignment Accuracy (Non-Negotiable)	
4. Disciplinary Literacy (Non-Negotiable)	
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, 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 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 (SEP), crosscutting concepts (CCC), and disciplinary core ideas (DCI) to support deeper learning. In the “Sky Watchers” unit, Lesson 1, (pages 38-39), students investigate with a shadow stick to observe changes in their shadow and measure its length multiple times throughout a day. Students engage in “Analyzing and Interpreting Data” (SEP) as they examine and compare how their shadows changed with the time of day (“Student Investigation, Sheet 1B”). Students consider how patterns (CCC) in their shadow data relate to patterns of the motion of the sun (DCI LE.ESS1A.a). In the “Light and Sound Waves” unit, Lesson 3, students are engaged in “Planning and Carrying Out Investigations” (SEP) to provide evidence that vibrating materials can make sound and that sound can make materials vibrate (DCI LE.PS4A.a). In “Investigation A” (page 75)

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			each pair of students is given a metal spoon and an unsharpened pencil and string. Students share their ideas about how they might use these materials to study vibrations. Students' ideas are recorded on a class chart. After investigating, the materials call for a student discussion (page 77) in which students discuss "Patterns" (CCC) in their observations of sound as it traveled through different materials. In the "Exploring Organisms" unit, Lesson 5, "Investigation C," students design a piece of equipment, a tool, or clothing that mimics an animal or plant structure (SEP, "Constructing Explanations and Designing Solutions"). The design must work to solve a human problem but mimic an animal or plant structure (CCC, "Structure and Function"). This design project requires students to apply new learnings from previous lessons related to several "Disciplinary Core Ideas" (LE.LS1A..a, LE.ETS1B.a, and LE.ETS1C.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**	Although improvement is needed, a majority of the time, observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning. For each unit, the instructional materials identify a descriptive narrative and short online video as the anchor phenomenon. While these videos and descriptive narratives offer exposure to

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			scientific content, they do not serve as anchoring phenomena that are puzzling, complex experiences driving the learning that follows. While phenomenon-based learning is not evidenced at an anchoring level, at an investigative level, phenomena serve to provide the purpose and opportunity for learning across the majority of lessons. Each lesson begins with a paragraph for the teacher to read aloud to students. Although lacking in variety of format, a majority of the presented investigative phenomena adequately provides an opportunity for learning. For example, in the "Sky Watchers" unit, Lesson 1, the teacher opens with a quick story about objects that can be seen in the sky. Some are objects are close and some are far. Some can be seen during the day, some at night and some can be seen both during the day and night (page 32). Students consider what this investigative phenomenon makes them wonder. Anticipated questions include, "How far up in the sky can planes fly?" and "Why can I see stars only at night?" This provides opportunity for students to build understanding to construct explanations for their questions about patterns in the daytime and nighttime skies throughout the series of investigations that follow.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			This is accomplished as students develop a chart to share their ideas about objects in the sky, investigate patterns in the Sun's position using shadow measurements taken over the course of a day, and compare patterns in the daytime and nighttime skies. As another example, in the "Light and Sound Waves" unit, Lesson 5, the teacher asks students to visualize themselves on the playground. The teacher continues asking students to notice that the swings, slide, and jungle gym are all different colors and that the Sun's bright light is bouncing off the slide. The teacher also asks students to visualize the shadows on the ground. This sets the stage for students to wonder about "how we see different colors" and "how [is] a shadow made?", providing the opportunity for students to investigate how different materials change the path of light. Students build understanding through designing and testing plans to bend light using mirrors and a flashlight (page 106).
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**	A majority, 8 out of 9 or 89%, of Louisiana Student Standards for grade 1 Science are incorporated to the full depth of the standards. The only standard not covered to its full depth is 1-PS4-4. The DCI, using tools to communicate, is addressed multiple times during the unit such as when students use

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
☒ Yes ☐ No			string and cups to make string cups to communicate (page 71). The SEP, constructing design solutions is also addressed as students create a device to solve a problem of communication (pages 129 - 131). However, the CCC, system and system model, is never called out in the unit. Examples of standards covered in full depth include LSS 1-PS4-1 which is addressed in the “Light and Sound” unit (page 40). To investigate the DCI, students touch their throats as they hum to feel the vibration, watch a digital simulation of vibrations, and tap a cup of water with a pencil to demonstrate that the pencil tapping against the cup makes a sound which travels through water as a vibration. To address the CCC, cause and effect, students respond to the question, "What caused the water to move?" (page 40). To address the SEP, students plan and conduct an investigation to explore vibrations using a drum. Students record observations and draw conclusions on “Student Investigation, Sheet 2A,” "Can You See Vibrations?"(page 51). 1-ESS1-1 is addressed in the “Sky Watchers” unit (page 32). Students observe shadows to look for patterns in the shadow’s position, and they compare how the shadow looks with the position of the Sun throughout the day. Students

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			begin building an age-appropriate understanding of Earth's place in the universe (DCI). Students observe, measure, and record the change in position of a shadow over the course of a day (SEP). They analyze shadow data to compare to patterns of the Sun's apparent movement across the sky (CCC). 1-LS3-1 is addressed in the "Exploring Organisms" unit (page 92). In "Investigation C," students observe a bean plant to collect evidence of the similarities and differences between plant parents and plant offspring (DCI). In "Investigation A," they use patterns to explain how traits are inherited, or passed, from parents to offspring (CCC). Students identify similarities and differences between animal offspring and their parents in "Investigation B" (SEP).
	REQUIRED **3b)** Science content is **accurate**, reflecting the most current and widely accepted explanations.	Yes	All reviewed content was accurate and aligned with the most current and widely accepted explanations. No evidence could be found of incorrect or out of date science 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 course or grade-band. 82 % or 9 of 11 standards addressed focus on Louisiana Student Standards for grade 1. Two standards do not fall within the Louisiana standard are K-2 ETS 1-1, and K-2 ETS 1 - 2. The "Engineering and Technology" standards are included in the program;

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			however, they enhance teaching and learning and do not distract from the overall learning target.
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. Materials address the necessity of using scientific evidence to support scientific ideas. Guidance on the incorporation of “Science Notebooks” is provided on page xi of each unit. Science notebooks are recommended for providing students with a written format for asking scientific questions, making predictions, recording evidence from observations, and develop explanations from evidence. For example, in the “Sky Watchers” unit (page 107) students use their science notebooks to respond to the prompt, “A bicycle is a system. It is made of parts that work together. Draw or write how the Sun, Earth, and Moon work together as a system.”

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			In the “Exploring Organisms” unit (page 41), students discuss with a partner the dependency a specific plant and animal have on their environment. The partners create a “Venn” diagram in their science notebook to compare and contrast the dependency of each. In a class discussion, each pair share their ideas with the class. In the “Light and Sound Waves” unit (pages 48-59), students engage in “Investigation C” to gain an understanding of how the thickness of the rubber bands and the force with which they are plucked affects pitch and volume. Students respond to nine pages of questions and requested drawings as they conduct their investigation. Students provide written responses to “Tell Me More” questions which can be used to assess how well they understand the concepts taught.
	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 produce solutions to problems, models of phenomena, explanations of theory development, and conclusions from investigations. For example, in the “Sky Watchers” unit (page 127-128), students work in groups to create models to demonstrate the movement of the Sun, Earth, and Moon in a system. The demonstration supports the phenomena that the Sun, Earth, and Moon

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			move in predictable patterns such as those that cause day, night, and seasons. In “Light and Sound Waves” unit (pages 72-80), students use cups and string to draw conclusions that sound needs a material to travel through and that vibrations travel as waves to our ears. In the “Exploring Organisms” unit (pages 60-61), students use different materials to model how animals act in nature. For example, students use a ball of dough to represent the soft body of an animal. Students make observations to the damage inflicted to the soft body when they attack it with their hands. Students also place the dough inside a plastic egg to represent the way an animals exoskeleton protects it from predators. These activities model the phenomenon of how adaptations help animals survive in their environment.
	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.	**Yes**	Materials provide a coherent sequence of authentic science sources that build scientific vocabulary and knowledge over the source of study. For example, in the “Sky Watchers” unit, when introducing a lesson on Earth’s rotation on its axis, the teacher introduces the term “rotate” by referencing the movement of hands around a clock. To deepen understanding, students physically act out clockwise and counterclockwise

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			rotations. Finally, students apply the terminology using a model of the Earth to investigate how the rotation of Earth on its axis affects day and night (pages 67-68). In the “Light and Sound Waves” unit (page 40), students are introduced to new vocabulary “vibrate” or “vibration” as they hum and touch their throat. Students interact with a digital simulation of vibrations. Finally, students investigate vibrations visually and kinesthetically by tapping a cup of water with their pencils and watching the vibrations move through the water. In the “Exploring Organisms” unit (page 38) the teacher explains the focus will be on living things and introduces the term “organism,” and explains that organisms are living things. Additionally, strategies for vocabulary development such as “Word Wall” strategy where students can post and label the equipment they will be using during a unit and “Say-Then-Write” strategy which enables students to use the academic vocabulary of science in both oral and written forms are recommended in all the units. For a specific reference see “Light and Sound Waves” (page xiv).
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.	**No**	The progression of learning is not coordinated and organized over time in a manner that supports student mastery of the performance expectations. The instructional units fail to include enough material for engaging students in robust three-dimensional science instruction over the progression of a full school year; therefore, students do not have an adequate amount of learning opportunities to fully engage with the grade level standards to build the understanding and proficiencies required to master the associated performance expectations. See indicator 7c.
	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.	**No**	Students do not apply mathematical thinking when applicable. While some application of mathematical thinking is included such as that found in the extension activities of the "Exploring Organisms" unit (pages 65 and 103), the overall amount of mathematical application is minimal. One unit lacks clear evidence of any mathematical application. While Math Standards are called out in the "Exploring Organisms" unit, "Lesson Overview" (pages xxv - xxix), for Lessons 1, 2, 4, and 5, only the examples on pages 65 and 103 could be found. In the "Sky Watchers" unit (page 33), students use rulers, chalk, a shadow stick, and an investigation sheet to investigate

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			patterns in the Sun's position using shadow measurements taken over the course of a day, which relates to Louisiana Math Standard 1.MD.A.1. In the "Light and Sound Wave" unit, Lesson Overview (pages xxv-xxx), even though Math Standards are identified for Lessons 2, 3, 5, and 6, no clear evidence of mathematical application is found in these lessons.
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 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. Each unit has a teacher's guide complete with instructions on how to navigate the guide. There are additional features included such as lesson overview charts, guides to instructional scaffolding, teacher preparation, background information, "NGSS Standards by Lesson, Literacy and Digital Components," and summative assessment. For an example of a teacher's guide see the "Exploring Organisms" unit, (page i). In the "Sky Watchers" unit (page 82), background information is provided to explain and diagram how Earth's orbital revolution around the sun together with

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			the tilt of its axis affects seasons in the different hemispheres of Earth. Scripts are also included in each lesson to help guide discussions. Instructions and materials needed to conduct investigations are included in each lesson. In “Light and Sound Waves” unit (page 35), teachers are given a materials list, then told what to post, and what questions to ask, etc. In the “Exploring Organisms” unit (page 36), a “Teacher Tip” is included to help teachers address the misconception students may have that nonliving things are dead things. To address this misconception, it is suggested that teachers explain that nonliving things were never living. Later on page 38, misconceptions are called out in the teacher script as teachers are provided with questions such as, “Do animals live anywhere besides on land? Can you provide examples?” to address the misconception that all organisms are land dwelling animals. On page 119, misconceptions are called out in the teacher’s script advising teachers to remind students to think about a plant’s roots to dispel misconceptions about plant parts that are located underground.
	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	**Yes**	There are appropriate suggestions and materials provided for differentiated instruction supporting varying student needs at the unit and lesson level.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
	options, suggestions for addressing common student difficulties to meet standards, etc.).		For example, “Differentiation Strategies” are called out and described (page xiv-xv) of each unit. Suggested strategies include “Tiered Instruction,” “Technology,” “Task Stations,” “Sense Learning,” and “Think-Pair-Share.” Strategy descriptors suggest multiple ways teachers can plan for differentiation. For example, the descriptor for “Task Stations” suggests that teachers identify tasks or questions related to the content, then develop stations around the classroom to address students individual needs, such as review activities for struggling learnings and challenges for high-level learners. Differentiation strategies are routinely called out at the lesson level. In the “Exploring Organisms” unit (page 43-44) two differentiation strategies are shown in boxes. One states, “It may be helpful to review anatomical structures with students. Ask them to create a chart in their science notebooks with at drawing and description of each anatomical structure you choose to review.” Another strategy is shown suggesting, “If students appear to struggle, provide time for them to compare answers with a partner.” In the “Sky Watchers” unit (page 108) a differentiation strategy is called out in the margin of the teacher’s manual suggesting that teachers create a mnemonic device to help students remember how the reflected

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			light of the moon proceeds during the Moon's phase changes. Specific examples are provided. In the "Light and Sound Waves" unit (page 77) a differentiation strategy is called out in the margin of the teacher's manual suggesting that teachers encourage students to come up with other variables they can test when investigating how sound travels to our ears. Ideas such as changing the length of the string are offered.
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. The materials, including the teacher's manual are accessible online and downloadable as PDF's. For example, if students go to the "New BBS 3D Platform" they can access online resources such as the digital simulation of Earth's rotation found in the "Sky Watchers" unit which allows them to observe Earth's rotation on its axis. A "Kit Materials" list is outlined in the "Sky Watchers" unit (page xxx) which lists instructional materials available in vendor packaging. Some included in this unit are Basalt rock samples, small and large spheres, wheels, chalk, rulers, and Sunrise and Sunset Card Set.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			There are also eText sets included for below-level, on-level readers, and Spanish readers. For example, in the "Light and Sound" unit, the below-level and on-level eReader, "Light and Sound Waves," is available with the Spanish eReader, "Ondaz de luz y sonido."
	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. In the "Exploring Organism" unit (as well as the other units) the teacher's guide (page xvii) addresses safety. "Safety Data Sheets" are available through the company website and are designated in the materials list when required for use in a lesson. A "Safety Rules for the Science" lab chart is available for discussion and display in the classroom, and there is a safety contract for students to sign. In "Sky Watchers" unit (page 68) a safety tip alerts students not to look directly into a flashlight used in Lesson 2 Investigation B because it can damage their eyesight. In the "Light and Sound Waves" unit, "Teacher Tip" (page 75) it is suggested that teachers caution students to tap the desk lightly while their partners ear is on it.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
	7c) The total amount of content is **viable** for a school year.	**No**	The total amount of content is not viable for the school year. The instructional materials contain 3 units. The “Exploring Organisms” and “Sky Watchers” units include 5 lessons each and the “Light and Sound Waves” unit includes 6 lessons. The content provided through these 16 lessons is inadequate to provide robust science instruction that involves students in doing science for the full length of the school year. The “180-Day Instructional Pacing Guide” provides guidance on pacing of content by indicating what should be taught each day. To expand the 16 lessons across the school year, the pacing guide devotes approximately half of the total daily science experiences to the extension activities, digital simulations, “Tell Me More” responses, and literacy articles. For example, in the “Light and Sound Waves” unit, Lesson 2, the “Sound Vibration Barrier” digital simulation allows students to press play to see how a barrier impacts sound waves. In Lesson 3, “Tell Me More” (page 79), students respond to the following prompt, “Give an example of a sound you have heard at school or at home. Describe what the sound traveled through to get to your ear.” A full day’s science instruction is an excessive amount of time to allot for such components, which are supplemental in nature and

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			designed to be used at the teacher's discretion. There is not enough material to provide an academic year of quality science instruction for students. This is a missed opportunity to provide additional student learning experiences that support mastery of the performance expectations of the grade level.
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. Summative assessments and answer keys are available at the end of each unit. Students can take the summative assessments online in BBS-3D. Summative assessment remediation strategies charts are also available. For example, each unit includes "Tell Me More" questions at the end of each lesson such as the one found in the "Light and Sound Waves" unit (page 77) in which students are asked to draw a picture showing how sound travels from the teacher's voice to students' ears. These questions provide teachers with an opportunity to formative assess student understanding of the concepts taught in the lesson.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			Additionally, “Student Investigation Sheets” are embedded within each lesson such as Student Investigation Sheet 1.D found in the “Exploring Organisms” unit (page 48) which formatively assessing students ability to match plant and animal structures with their function. In “Exploring Organisms” (page 53) the “Teacher Preparation” section tells teachers in “Investigations A and B” to make a copy of the “Assessment Observation Sheet” and during the investigations use the questions and prompts to formatively assess students as they work. Summative assessments are provided at the end of each unit to assess students’ mastery of standards addressed within the unit and “General Rubrics” are available in “Appendix A” which can be used to assess individual progress. Students can also take the summative assessments online in “BBS-3D.” Summative assessment remediation strategies charts are also available (page 145).
	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. Each unit has a summative assessment that helps to evaluate student understanding of key unit concepts. The summative assessment located at the end of the “Light and Sound Waves” unit has ten questions which included constructed

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			response, matching, and multiple choice. Item 5 asks students, "When do sound waves form? Circle all that apply. a. When an object moves back and forth on a table. b. When an object is sitting still on a table. c. When an object is hit by a hard object like a stick." This item integrates the CC Cause and Effect and DCI LE.PS4A.a. In the "Light and Sound Waves" unit (page 96-97) Student Investigation Sheet 4.A integrates the 3 dimensions of 1-PS4-2. The sheet asks students to predict, observe, explain, and provide evidence for the necessity of light for objects to be seen, which involves students in "Engaging in Argument from Evidence and Constructing Explanations" (SEPs) Teachers can also utilize this "Investigation, Sheet 4A" to assess students' understanding that the observed patterns (CCC, "Cause and Effect") provide evidence for the idea that objects can be seen if light is available to illuminate them (DCI LE.PS4B.a). In the "Exploring Organisms" unit (page 64) students are asked to explain how a dog's keen sense of smell helps it survive. This written response task is an opportunity for students to integrate the three dimensions as students "Construct Explanations" (SEP) about how the dog's sense of smell functions (CCC, "Structure and Function") to process information and survive (DCI LE.LS1D.a, LE.LS1A.a).

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
	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. A general rubric is provided to assess students' performance throughout each unit. For example, the "Exploring Organisms" unit, "Appendix A" has a general rubric (page 145) that measures exploration, vocabulary, concept building and the science notebook. "Assessment Observation Sheets" at the end of each lesson provide talking points for the teacher and observations to note during student exploration activities, quiet conversations, and class discussions. For example, in the "Exploring Organisms" unit (page 112), the "Assessment Observation Sheet" includes criteria such as, "Can students compare the appearance of young organisms and their parents? Do they notice patterns in their appearance?," which align with performance expectation 1-LS3-1. These criteria are specific, observable, and measurable and help teachers access student progress in mastering content. A teacher's version containing exemplar responses is provided to accompany each "Student Investigation" sheet. For example, a "Teacher Version of Student Investigation 5A.1" in the "Light and Sound

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			Waves" unit (page 121), which provides exemplars of student evidence used to support a claim as to whether various materials are transparent, translucent, or opaque. Exemplar responses such as, "the light did not pass through" or "the light bounced off" are specific, observable, and measurable. The instructional materials provide scoring guides for the Summative Assessments at the end of each unit. The "Sky Watchers" unit (pages 141-143) provides an example of such. Each guide includes a chart that shows which performance expectation is addressed by each item of the summative assessment. Additionally, the chart also identifies which lesson should be revisited for remediation purposes for each summative assessment item.

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**	Students have multiple opportunities throughout each unit to demonstrate application of the three dimensions. The three dimensions are most often integrated with one another to support a deeper learning of the performance expectations

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
	2. Phenomenon-Based Instruction	**Yes**	Although improvement is needed, a majority of the time, observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning. Investigative phenomenon at the lesson level are used to engage students and drive learning for the lesson. Investigative phenomena are related across the unit but could be improved by linking to a larger overarching anchor phenomena.
	3. Alignment & Accuracy	**Yes**	89% (8 out of 9) of the “Louisiana Student Standards” for grade 1 are appropriately addressed by the instructional materials and minimal time is spent on content that is outside of the course.
	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.
II: Additional Indicators of Quality	5. Learning Progressions	**No**	The instructional materials do not provide a sufficient amount of instructional opportunities for engaging students in robust three-dimensional science instruction over the progression of a full school year.
	6. Scaffolding and Support	**Yes**	There are separate teacher support materials which build teacher knowledge and assist them in providing students with robust, varied learning opportunities to

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			deepen conceptual understanding and develop scientific thinking.
	7. Usability	**Yes**	Text sets, laboratory, and other scientific materials are readily accessible both digitally and through vendor packaging. The laboratory kits are outlined in the unit overview and can be purchased from the company. Each unit includes strategies for establishing safety procedures in the classroom or science lab. However, additional materials and learning opportunities should be included to make the program viable for a school year.
	8. Assessment	**Yes**	Multiple types of formative and summative assessments are embedded in the instructional units. The assessments include items and tasks designed to measure student mastery of learning targets across the three dimensions.
FINAL DECISION FOR THIS MATERIAL: **Tier II, Approaching 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: **Building Blocks of Science 3D** Grade/Course: **2**

Publisher: **Carolina Biological Supply Company** Copyright: **2019**

Overall Rating: **Tier II, Approaching quality**

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

STRONG	WEAK
1. Three-dimensional Learning (Non-Negotiable)	5. Learning Progressions
2. Phenomenon-Based Instruction (Non-Negotiable)	
3. Alignment Accuracy (Non-Negotiable)	
4. Disciplinary Literacy (Non-Negotiable)	
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, 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 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 (SEP), crosscutting concepts (CCC), and disciplinary core ideas (DCI) to support deeper learning. For example, in the "Matter" unit, Lesson 5 (pages 119-129), students build understanding of concepts related to DCI LE.PS1B.a. Students investigate physical changes as they warm a jar of coconut oil and observe melting, then place the jar in ice and observe the oil reharden (page 121). Students investigate chemical changes as they mix calcite and vinegar and observe the results (pages 124-125). Students engage with the CCC, "Cause and Effect," as they investigate how changes in temperature cause changes in matter such as when an increase in temperature causes coconut oil to melt or eggs to cook. Students apply the SEP, "Engaging in Argument from Evidence," as they justify whether changes in matter are physical or chemical in the scenario given on "Student Investigation. Sheet 5C" (page 140-145).

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			In the “Ecosystem Diversity” unit, Lesson 3, students build a model (SEP, “Developing and Using Models”) to apply understanding of how animals can pollinate plants or disperse seeds (DCI LE.LS2A.b). Students apply the CCC, “Patterns,” as they identify commonalities between animals that transfer pollen and those that disperse seeds.
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**	Although improvement is needed, a majority of the time, observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning. For each unit, the instructional materials identify a descriptive narrative and short online video as the anchor phenomenon. While these videos and descriptive narratives offer exposure to scientific content, they do not serve as anchoring phenomena that are puzzling, complex experiences driving the learning that follows. While phenomenon-based learning is not evidenced at an anchoring level, at an investigative level, phenomena serve to provide the purpose and opportunity for learning across the majority of lessons. Each lesson begins with a paragraph for the teacher to read aloud to students. Although lacking in variety of format, a majority of the presented investigative

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			phenomena adequately provides opportunity for learning. For example, in the “Matter” unit, Lesson 2, the teacher opens with a quick story about three birds on a hot day who add ice cubes to their steaming bird bath to cool off, but the ice cubes disappear (page 52). Students consider what this investigative phenomenon makes them wonder. Anticipated questions include, “What happened to the ice cubes?” and “Why was there steam near the water?” Students build understanding to construct explanations for their questions about the water, steam, and ice cubes in the bird bath throughout the series of investigations that follow. This is accomplished as students make firsthand observations of water in its various states, contrast properties of different materials, and gather evidence to support the idea that matter is made of particles too small to be seen that change in their attraction and movement in various states. As another example, in the “Ecosystem Diversity” unit, Lesson 4, the teacher shares with students that zoos maintain buildings and outdoor terrestrial and aquatic exhibits that are maintained and monitored to ensure specific characteristics such as salt level and temperature. This sets the stage for students to wonder about why zoos design habitats in this way, providing the

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			opportunity to explore characteristics of animals in relation to the diverse habitats that they prefer. Students build understanding through hands-on investigations of pill bugs (page 90) in which they determine characteristics of a habitat that best suit this organism.
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**	All of the Louisiana Student Standards for Science in grade 2 are incorporated to the full depth of the standard. No evidence was found of a standard being insufficiently covered. LSS 2-LS2-1 is addressed in the "Ecosystem Diversity" unit (pages 41-42, 60). Students plan and carry out an investigation (SEP) to test whether or not plants need sunlight or water to grow (DCI). Students brainstorm ways that a habitat's climate affects the plants that live there (CCC). LSS 2-PS1-1 is addressed in the "Matter" unit (pages 72-80). Students plan and conduct investigations (SEP) to describe and classify different kinds of materials by their observable properties (DCI) in "Investigations A, B, and C." Students are asked, "Did you notice any patterns in how the substances mixed?" (CCC, page 80). LSS 2-ESS1-1 and 2-ESS2-1 are addressed in Lesson 3 (pages 100 -110) of the "Earth Materials" unit. Students use information from several sources "Earth Materials Literacy Reader," "Interactive Whiteboard

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			Our Ideas About Soil," "Comparing Sand and Soil," and "Simulation Soil Erosion" to investigate how wind and water can slowly change and shape sand (DCI & CCC). Students further design a solution to slow down the erosion of sand by wind (SEP, DCI).
	REQUIRED **3b)** Science content is **accurate**, reflecting the most current and widely accepted explanations.	**Yes**	All reviewed content was accurate, up-to-date and aligned with the most current and widely accepted explanations. No evidence could be found of incorrect or out-of-date science 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 course or grade-band. 79% or 11 of 14 standards addressed focus on Louisiana Student Standards for grade 2. Three of the standards that do not fall within the Louisiana standards are K-2 ETS 1-1, K-2 ETS 1-2, and K-2 ETS 1 -3. The "Engineering and Technology" standards are included in the program; however, they enhance teaching and learning and do not distract from the overall learning target.
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	**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**	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
writing to develop scientific literacy. ☒ Yes ☐ No	**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. Materials address the necessity of using scientific evidence to support scientific ideas. In the “Earth Materials” unit (page 195-196), students create a model island with two landforms and one body of freshwater. After creating their model, students produce a written description of their model (page 196) and present their model to the class. Presentations include a description of the materials that make up Earth’s surface and how at least one of their landforms could be affected by erosion (page 197). In “Ecosystem Diversity” unit (pages 41-43), students design and carry out an experiment to determine what plants need to grow well. They must share ideas, design an experiment to test which things plants need to grow well, perform the experiment, make observations, and document observations on Student Investigation Sheets. Students are also encouraged to make entries in their science notebook. In the unit “Matter” (pages 116-166), students engage in Investigation 5A to determine how well they understand the physical changes that occurred as coconut oil is heated and cooled. Students provide

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			written responses to five pages of questions and illustrate their observations as they conduct their investigation. There are “Tell Me More” Questions that can be used to assess how well students understand the concepts taught.
	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 produce solutions to problems, models of phenomena, explanations of theory development, and conclusions from investigations. In the “Matter” unit (pages 52-55), students use balloons to draw conclusions about gases and the behavior of their particles. In “Earth Materials” unit (pages 132-157), students are asked to analyze the components of soil obtained from the local area. In “Tell Me More!” students are asked to draw a picture of the types of living things they thought they might find if they dug a few inches down in the soil and connect to the investigative phenomenon. Later students model the phenomena of glacial erosion using an ice cube and sand (page 164).

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.	**Yes**	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 to deepen scientific learning. For example, in the “Matter” unit (page 78), students are introduced to new terminology “fluid” and “viscous” as they compare properties of different liquids. After observing the flow of oil and soap, students develop their own definitions for these terms. In the “Ecosystem Diversity” unit (page 58), students examine a diagram of a plant life cycle and reference their experience in sprouting radish seeds to generate a definition for “germination”. This vocabulary understanding supports deeper understanding of DCI that plants are dependent on animals to spread their seeds around so they can germinate. In the “Earth Materials” unit (pages 42-44), during a teacher facilitated discussion of the water cycle the words precipitation, evaporation, and condensation are introduced to students. Additionally, strategies for vocabulary development such as the Word Wall Strategy where students can post and label the equipment they will be using during a

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			unit and the "Say-Then-Write" strategy which enables students to use the academic vocabulary of science in both oral and written forms are recommended in all the units. For a specific reference see "Ecosystem Diversity" (page xiv).
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.	**No**	The progression of learning is not coordinated and organized over time in a manner that supports student mastery of the performance expectations. The instructional units fail to include enough material for engaging students in robust three-dimensional science instruction over the progression of a full school year; therefore, students do not have an adequate amount of learning opportunities to fully engage with the grade level standards to build the understanding and proficiencies required to master the associated performance expectations. See indicator 7c.
	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 applicable grade's expectations in the "Louisiana Student Standards for Mathematics." In the "Earth Materials" unit (page 47), "Student Investigation, Sheet 1D.2, Can I Graph the Amount of Land and Water?" students assemble a graph which aligns with Louisiana Math Standard 2.MD.D.10

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			which is called out in the unit overview (page xxvi). In the "Ecosystem Diversity" unit (page 61), students add and subtract within twenty to solve equations to complete a color-by-number illustration of an animal in its habitat. The Louisiana Student Standard for Mathematics 2.OA.B.2 is called out in the unit overview (page xxvi). In the "Matter" unit (page 66), students classify matter as solids or liquids, then create a bar graph to show the quantity of each type of matter. The Louisiana Student Standard for Mathematics, 2.MD.D.10 is called out in the unit overview (page xxvi).
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 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. For example, a "Background Knowledge" section is included at the beginning of each lesson in each unit of the teacher's manual. In the "Earth Materials" unit (page 135), background knowledge on soil is provided. Teachers can review different soil types and textures, how soil is affected by erosion, and how soil can be conserved in preparation for teaching the lesson.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			Scripts are included in each lesson to help guide discussions. Instructions and materials needed to conduct investigations are included in each lesson. In the “Earth Materials” unit (page 38), teachers are given a materials list which includes a science notebook, “Assessment Observation Sheet,” chart paper, and markers. Teachers are provided with step-by-step directions telling what to post, “Our Ideas About the Things that Make Up Earth” and what to ask such as, “What things to you think compose the Earth?”. Exemplars student responses are also provided throughout each lesson to guide classroom discussions. For example, in the “Ecosystem Biodiversity” unit (page 77), the exemplar student response, “Seeds attach to animals’ fur and can be dispersed as they move around. Animals also eat seeds; when an animal eliminates waste, seeds are dispersed, and they may grow into plants in that location. Larger animals such as dogs, rabbits, and squirrels disperse seeds” is provided in response to the teacher discussion question, “How do animals help with seed dispersal? What kinds of animals do this?”
	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 supporting varying student needs at the unit and lesson level.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			For example, "Differentiation Strategies" are called out and described (page xiv-xv) of each unit. Suggested strategies include "Tiered Instruction," "Technology," "Task Stations," "Sense Learning," and "Think-Pair-Share." Strategy descriptors suggest multiple ways teachers can plan for differentiation. For example, the descriptor for "Sense Learning" suggests that teachers incorporate videos, infographics, audio, charts, illustrations, spoken and written directions, physical objects, acting, and art into lessons. Suggestions for differentiation are also included at the lesson level. In the "Matter" unit (page 38) a differentiation strategy is included in the margin for students who struggle to distinguish between different materials. The strategy suggests that teachers set up a station activity using nails, wooden rulers, and toys and then explain that these materials are different because some are made from plastic while others are made from wood and iron. In the "Ecosystem Diversity" unit (page 38) a differentiation strategy is shown in a box in the margin which directs teachers to ask students who struggle to understand the basic needs of living things to think about how they might prepare to plant a garden or adopt a pet. Teachers may further ask, "Ask what things they would

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			need to make sure the living thing can live and grow." In the "Earth Materials" unit (page 38) a differentiation strategy is included in the margin suggesting that teacher's use a "KLEWS" chart throughout the unit to help students formulate claims and evidence. For example, in a discussion about the things that make up the Earth, it is suggested that students write their "Knows" and "Wonders" on sticky notes and stick them under the K and W on the chart to refer to throughout the unit (page 38).
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**	Student text, laboratory sheets, and other scientific materials are readily available through vendor packaging. Students may access student readers and interactive readers online through the vendor portal. Student laboratory sheets, investigation sheets, and literacy articles are available in PDF format and online through the vendor portal. Scientific materials that are needed for experiments are listed and most are included in vendor packaging according to the supply lists included within the teacher's manual. In the "Ecosystem Diversity" unit (page xxx-xxxi), the kit materials are outlined in a chart showing quantities supplied and what lessons the item would be used in. For example, the kit lists such items as choice chamber, dried bee, habitat card set, and literacy reader.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			If students go to “New BBS 3D” Platform they can access online resources on the unit “Matter” and use a simulation “Identity Change to understand physical changes by observing the effects of temperature. Student Readers are provided for each unit. For example, in the “Ecosystem Diversity” unit, a below grade level, “Ecosystem Diversity,” and on grade level reader, “Exploring Organisms,” is provided. An explanation of how to use leveled readers is found on page xiii. Literacy articles are found in each unit. For example, in the “Earth Materials” unit, “Literacy and Science Article 2A, My Time Machine” is found on page 78 and “Literacy Article 3A, Breaking Down Earth’s Materials” is found on page 113. Student “Investigation Sheets” are provided in each unit. For example, in the “Matter” unit “Student Investigation Sheet 3A, “Which Materials Will Mix?” is included to guide students in predicting, observing, recording, and comparing solid mixtures to solid and liquid mixtures (pages 84-86). “Student Investigation Sheet 4A, “How Can Physical Properties be Used to Identify Materials?” guides students to examine the physical properties of different solids, including whether or not they sink or float (pages 101-105).

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
	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. In “Ecosystem Diversity” (as well as the other units) in the teacher’s guide, page xvii, safety is addressed. Safety Data Sheets are available through the company website and are designated in the materials list when required for use in a lesson. A “Safety Rules for the Science” lab chart is available for discussion and display in the classroom, and there is a safety contract for students to sign. Additional safety procedures are called out as needed within lessons. For example, in the “Matter” unit (page 57), a safety tip is called out advising teachers to follow manufacturer’s instructions when operating a hot plate or kettle and to avoid contact with steam. In the Earth Materials unit (page 105), students are instructed to wear safety goggles while investigating the effect wind has on sand. The Teacher Tip suggests that the teacher also wear goggles to demonstrate the importance of following proper safety procedures.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
	7c) The total amount of content is **viable** for a school year.	**No**	The total amount of content is not viable for the school year. The instructional materials contain 3 units. The Matter and “Ecosystem Diversity” units include 5 lessons each and the Earth Materials unit includes 6 lessons. The content provided through these 16 lessons is inadequate to provide robust science instruction that involves students in doing science for the full length of the school year. The “180-Day Instructional Pacing Guide” provides guidance on pacing of content by indicating what should be taught each day. To expand the 16 lessons across the school year, the pacing guide devotes approximately half of the total daily science experiences to the extension activities, digital simulations, “Tell Me More” responses, and literacy articles. For example, in the “Matter” unit, Lesson 2, the “Water Conservation” digital simulation allows students to press play to see 3 different containers fill in comparison with a beaker. In Lesson 3, “Tell Me More” (page 80), students respond to the following prompt, “Brass, which is used to make instruments like trumpets, is made by mixing two metals copper and zinc. What must happen before these metals can be mixed?” A full day’s science instruction is an excessive amount of time to allot for such components, which are supplemental in

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			nature and designed to be used at the teacher's discretion. There is not enough material to provide an academic year of quality science instruction for students. This is a missed opportunity to provide additional student learning experiences that support mastery of the performance expectations of the grade level.
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. Summative assessments and answer keys are available at the end of each unit, students can also take the summative assessments on-line in BBS-3D. Summative assessment remediation strategies chart are also available. In the "Earth Materials" unit (page 140), the "Tell Me More" is a formative assessment which has a place for teacher notes. Assessment strategies are listed on page 144 and refer to available "Assessment Observation Sheets" and "General Rubrics" available in "Appendix A" which can be used to assess individual progress. In the "Matter" unit an "Assessment Observation Sheet" is found at the end of

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			each lesson such as at the end of Lesson 2 (page 80) which provides the teacher with student "look-fors" when formatively assessing student discussions on the properties of different phases of matter. A "Student Investigation Sheet" follows each lesson such as at the end of Lesson 4 (page 101-104) which allows teachers to formatively assess students' ability to explain the properties of different substances. A summative assessment tool follows each unit such as at the end of the "Matter" unit (page 149).
	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, a summative assessment is provided at the conclusion of the "Ecosystem Diversity" unit (page 123-127) which addresses the three-dimensions. Question 2, "Which characteristic is common for animals that live in the dessert?" measures student understanding of "Patterns" (CCC) in the diversity of the many kinds of living things in any area (DCI LE.LS4D.a). Question 5 addresses students' ability to apply understanding of DCI LE.LS2A.b and "Cause and Effect" (CCC) relationships to predict the result of a hummingbird drinking nectar from pink flowers more often than white. Question 9 asks students to examine an experimental procedure to determine a problem in the design and explain how the problem could be solved. This question focuses on the

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			SEP, "Planning and Conducting Investigations." Additional assessment tools are provided by way of Student Investigation Sheets. For example, in the "Earth Materials" unit, Student Investigation Sheet 3D, students record their predictions and plan to slow down the effects (CCC) design a model that slows down the effects of the wind. Examination of a student's sheet will provide the teacher with insight into students' ability to "Design Solutions" (SEP) and understanding of the "Disciplinary Core Ideas" LE.ESS2A.a and LE.ETS1C.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. A general rubric is provided to assess students' performance throughout each unit. For example, the "Ecosystem Diversity" unit, "Appendix A," has a general rubric that measures exploration, vocabulary, concept building and the science notebook. Instructional materials also include more specific rubrics that give detailed, observable criteria in relation to a culminating project. For example, in the "Earth Materials" unit (page 212), "Teacher Sheet 6B" assists the teacher in

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			evaluating each student's model island and presentation content and is aligned to performance expectations 2-ESS2-2 and 2-ESS2-1 in that it requires students to accurately represent the appropriate placement of landforms, describe the landforms and bodies of water represented, describe and explain the materials chosen, and describe how the landform could be affected by erosion. Assessment Observation Sheets at the end of each lesson provide talking points for the teacher and observations to note during student exploration activities, quiet conversations, and class discussions. For example, in the Ecosystem Diversity unit (page 86), the Assessment Observation Sheet includes criteria such as, "Do students' models accurately demonstrate seed dispersal or pollination? Can students describe the characteristics of the animal that assists in either process?", which align with Performance Expectation 2-LS2-2. These criteria are specific, observable, and measurable and help teachers access student progress in mastering content. The instructional materials provide scoring guides for the "Summative Assessments" at the end of each unit. The "Matter" unit (pages 161-164) provides an example of such. Each guide includes a chart that shows which performance expectation is addressed by each item of the summative

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			assessment. Additionally, the chart also identifies which lesson should be revisited for remediation purposes for each summative assessment item.

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**	Students have multiple opportunities throughout each unit to demonstrate application of the three dimensions. The three dimensions are most often integrated with one another to support a deeper learning of the performance expectations
	2. Phenomenon-Based Instruction	**Yes**	Although improvement is needed, a majority of the time, observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning. Investigative phenomenon at the lesson level are used to engage students and drive learning for the lesson. Investigative phenomena are related across the unit but could be improved by linking to a larger overarching anchor phenomena.
	3. Alignment & Accuracy	**Yes**	100% (11 out of 11) of the "Louisiana Student Standards" for grade 2 are appropriately addressed by the instructional materials and minimal time is

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			spent on content that is outside of the course.
	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.
II: Additional Indicators of Quality	5. Learning Progressions	**No**	The instructional materials do not provide a sufficient amount of instructional opportunities for engaging students in robust three-dimensional science instruction over the progression of a full school year.
	6. Scaffolding and Support	**Yes**	There are separate teacher support materials which build teacher knowledge and assist them in providing students with robust, varied learning opportunities to deepen conceptual understanding and develop scientific thinking.
	7. Usability	**Yes**	Text sets, laboratory, and other scientific materials are readily accessible both digitally and through vendor packaging. The laboratory kits are outlined in the unit overview and can be purchased from the company. Each unit includes strategies for establishing safety procedures in the classroom or science lab. However, additional materials and learning opportunities should be included to make the program viable for a school year.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
	8. Assessment	**Yes**	Multiple types of formative and summative assessments are embedded in the instructional units. The assessments include items and tasks designed to measure student mastery of learning targets across the three dimensions.
FINAL DECISION FOR THIS MATERIAL: **Tier II, Approaching 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: **Building Blocks of Science 3D** Grade/Course: **3**

Publisher: **Carolina Biological Supply Company** Copyright: **2019**

Overall Rating: **Tier II, Approaching quality**

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

STRONG	WEAK
1. Three-dimensional Learning (Non-Negotiable)	5. Learning Progressions
2. Phenomenon-Based Instruction (Non-Negotiable)	
3. Alignment Accuracy (Non-Negotiable)	
4. Disciplinary Literacy (Non-Negotiable)	
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, 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 scientific content knowledge and 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 "Weather and Climate Patterns" unit, the CCC, "Patterns," is addressed several times. For example, in Lesson 1, "Investigation C" (page 42), and across lessons throughout the entire module, students are asked to collect and record their own qualitative and quantitative observations of local weather and look for and discuss "Patterns" (CCC) that they notice in temperature, precipitation, and wind. Students analyze and discuss their local weather observations and examine how it compares to actual meteorological findings (SEP, "Analyzing and Interpreting Data") In Lessons 3 and 4, the CCC, "Patterns," is addressed as students analyze patterns in their local weather over the week. Students are then asked to analyze patterns within tables of information containing weather data from

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			two cities. Looking at these tables, students should find patterns of temperature and wind with the given data. The DCI, UE.ESS2.D.a, is addressed throughout the unit, such as in Lesson 3, “Investigation C,” when students are asked to make predictions about weather in various cities based on climate data. The “Life in Ecosystems” unit, Lesson 2, “Investigation A and B”, involves students in collecting data about their own inherited traits and comparing their data with classmates to look for “Patterns” (CCC). Students then compile, interpret and graph that data (SEP, “Analyzing and Interpreting Data”). The integration of these dimensions supports students in building understanding that organisms have many inherited traits that can cause variation in the look and function of individuals (DCIs UE.LS3A.a and UE.LS3B.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**	Although improvement is needed, a majority of the time, observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning. For each unit, the instructional materials identify a descriptive narrative and short online video as the anchor phenomenon. While these videos and descriptive narratives offer exposure to scientific content, they do not serve as anchoring phenomena that are puzzling, complex experiences driving the learning that follows.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			While phenomenon-based learning is not evidenced at an anchoring level, at an investigative level, phenomena serve to provide the purpose and opportunity for learning across the majority of lessons. Each lesson begins with a paragraph for the teacher to read aloud to students. Although lacking in variety of format, a majority of the presented investigative phenomena adequately provides opportunity for learning. For example, in the "Life in Ecosystems" unit, Lesson 1 students engage with investigative phenomenon related to the diversity of living things in a park . The teacher describes a scene in the park and includes the sights and sounds that one might notice such as a frog croaking or a line of ants. Students are asked to generate questions about the scene. Anticipated questions include, "Why do so many different things live in this park? " and "Are there things besides plants and animals living in this park?" This sets the stage for learning that follows throughout the lesson as students engage in discussions about the plants and animals around us and compare the life cycles of various plants and animals. By observing the life cycle of a plant, students observe and interact with science concepts helping to build an understanding of the diversity of life that exists within ecosystems.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			In the “Forces and Motion” unit, Lesson 3, the investigative phenomenon is introduced to students as the teacher describes four friends getting on an amusement park ride. While getting on the ride, they notice height and weight requirements and that the car seems to slow down during a turn. Students are asked to generate questions about this situation and investigate throughout the lesson to discover connections between force and motion and the scenario. Students build this knowledge through investigations in Lesson 3 beginning with an exploration using a car and different types of weights attached to the car. This exploration of force continues as students engage with magnets and washers determining the relationship between force and mass by adding additional washers and magnets to the experiment.
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	All of Louisiana Student Standards for grade 3 are appropriately addressed by the instructional materials. These standards are addressed to the full depth of the standard and include various opportunities for student learning. The “Weather and Climate Patterns” unit appropriately addresses standard 3-ESS3-1. The SEP, engaging in argument from evidence, CCC of cause and effect, and DCI are appropriately addressed. Students begin researching natural hazards (DCI)

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			within a group (page 176). After researching, students propose possible design solutions (DCI) and develop a claim about the effectiveness of the proposed solution (SEP). "Student Investigation, Sheet 5A" guides students through this process of researching and planning while asking students to identify ways that the proposed solution may affect (CCC) the environment. Finally, students present information to classmates related to the weather hazard and a possible solution while evaluating its effectiveness (PE). In the "Force and Motion" unit, Lesson 1, "Investigations A, B and C3-PS2-1," students "plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object". Students construct a balance beam and determine how various masses affect the balance beam, including the effect of gravity. Lesson 5, "Investigation B," addresses standard 3-PS2-4. Students build a simple -design with magnetics using 4 different design challenges (pages 157-158).
	REQUIRED **3b)** Science content is **accurate**, reflecting the most current and widely accepted explanations.	Yes	All reviewed content was accurate, up-to date and aligned with the most current and widely accepted explanations. No evidence could be found of incorrect or out of date science 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 course or grade-band. 88 % or 15 of 17 standards addressed focus on Louisiana Student

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			Standards for grade 3. Two of the standards that do not fall within the Louisiana standards are 3-5 ETS 1-1 and 3-5 ETS 1 - 2. The "Engineering and Technology" standards are included in the program; however, they enhance teaching and learning and do not distract from the overall learning target.
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 ideas and have opportunities to discuss scientific phenomenon. In the "Forces and Interactions" unit, Lesson 3, student are presented with the phenomenon of the roller coaster at the amusement park and the fact that the car seems to slow down at turns. Students begin the lesson by generating questions related to the phenomenon and discussing unbalanced forces. Students also discuss how the strength of a force can affect the motion of an object (page 46-47). Students update science notebooks with new information about forces (page 48) and

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			use this new information to explain the phenomenon at the end of the lesson. In the “Life in Ecosystems” unit, Lesson 5, students make observations of plants and butterflies that have been growing and changing inside a classroom ecosystem model. Students record observations of the ecosystem in a science notebook (page 76). Students discuss why the “Wisconsin Fast Plants” and the “Painted Lady Butterflies” from the classroom observation cannot be released into the local ecosystem. Finally, students write ideas about how humans interact with the ecosystem and then discuss these ideas with a partner(page 78). In the “Weather and Climate Patterns” unit, students regularly engage in speaking and writing about the scientific phenomenon. In Lesson 2, Investigation B, students research climates in various cities in North America (pages 73-75). In Lessons 4 and 5, students research and present weather hazards and how to reduce the impact weather hazards (pages 151-152;175-179).
	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, drawing conclusions, conducting tests ,and designing solutions to problems. In the “Force and Motion” unit, there is a variability in the tasks that students are

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			required to investigate throughout out the unit. In Lesson 1, “Investigations, A, B, and C,” students build a balance beam and investigate how mass and gravity affect balanced and unbalanced forces (pages 41-45). In Lesson 5, “Investigation B,” students are using magnets to solve problems by building simple designs (page 157-158). The “Life in Ecosystems” unit, Lesson 4 gives students an opportunity to observe how environmental factors affect plant growth. Students observe plants that have been moved away from the light source and draw conclusions as to why the stems are not growing straight, but rather bent (page 65).
	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.	**Yes**	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. In the “Force and Motion” unit, Lesson 1, students have multiple opportunity to use balance and unbalanced force, fulcrum, gram, level, gravity, and other vocabulary listed (page 33). This vocabulary is easily used within the investigations. In Lesson 3, students are given ample opportunity to use the vocabulary listed (page 87), through the various investigations.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			The "Life in Ecosystems" unit begins with a brainstorming session in which partners define the word "ecosystem". The teacher lists words (forest, city, school, etc), and the partners classify these as ecosystems or not ecosystems. After breaking the word apart and asking that students focus on the "system" part of the word, the students discuss what things are part of an ecosystem, and the teacher clarifies by defining the term (page 6).
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.	**No**	The progression of learning is not coordinated and organized over time in a manner that supports student mastery of the performance expectations. The instructional units fail to include enough material for engaging students in robust three-dimensional science instruction over the progression of a full school year; therefore, students do not have an adequate amount of learning opportunities to fully engage with the grade level standards to build the understanding and proficiencies required to master the associated performance expectations. See indicator 7c.
	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	**No**	The materials present some opportunity for students to apply mathematical thinking. Math skills beyond the grade level's expectations in the Louisiana Student Standards for Mathematics are introduced.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
	clear references to the math standards, specifically in teacher materials.		For example, in the "Weather and Climate Patterns" unit (page 71), "Student Investigation, Sheet 2A," students are called to find the average of a set of temperatures. This includes dividing the total, which is a concept introduced in third grade and developed further in 4th grade (4.NBT.6). Students are also asked to estimate the average temperature.
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 including teacher background knowledge, information on the 5E teaching framework, teacher preparation notes, and guidance to address student misconceptions. In the "Weather and Climate" unit, Lesson 4 (page 147), teachers are given an entire page of background information about the topic being taught. It furthers teachers' background knowledge on air masses, tropical storms, how meteorologist give warnings to regions about dangerous weather, and the importance of seeking shelter during these warnings. This can be found within each of the lessons. Each unit has a section for "Differentiation Strategies" and "Strategies for English Language Learners." There is also a section, "Evidence of Instructional Scaffolding," in which each lesson gives teachers a "guided process" that "systematically builds upon students' knowledge." Information regarding the 5E

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			instructional model can be found on page Viii of each unit. In the “Life in Ecosystems” unit, Lesson 4 (page 61-62), notes are included prior to the lesson to aide teachers in preparation. The preparation notes direct the teacher to create a chart, gather colored chips, make copies of needed investigation sheets and gather colored pencils. Notes included within the materials also address possible student misconceptions. On page 78, a note is given to dispel the common thought that bones are fossils and indicates that fossils are the traces of the remains of an organism.
	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 are given to support diverse learners and ensure that all students master the content. A “Differentiation Strategies” section is included at the beginning of each unit (page xiv). Here teachers can find suggested strategies and resources for differentiation of instruction. A Scaffolding chart is additionally provided in each unit to help teachers gauge each student's achievement level (page xxii-xxiii). Finally, content specific strategies are called out in the margins of the “Teacher’s Manuals.” In the “Forces and Interaction” unit, page 40 offers teaching tips on the margins of the page for an alternative teaching approach. This also gives suggestions for common student difficulties to meet the

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			standards. Page xxv offers a detailed pacing guide. Page 47 has extension activities to extend the lesson and the instructional delivery options. In the “Life in Ecosystems” unit, page 73 offers teaching tips on the margins of the page for an alternative teaching approach. This also gives suggestions for common student difficulties to meet the standards. Page xxvi offers a detailed pacing guide. Page 79 has extension activities to extend the lesson and the instructional delivery option.
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 materials, and other scientific materials are readily accessible through vendor packaging. The teacher’s edition is online and may be downloaded as a PDF file or used online. The units contain the information needed to teach the lesson including how to access the digital component of the curriculum and access to reading materials. The sheets needed to complete each unit are very easy to find within the teacher’s edition. The laboratory materials are listed out and provided through the vendor, along with how to set up each investigation and a time frame of how to do so. In the “Force and Interactions” unit (page xxi), a description is given about each of the digital components offered in the unit along with information to access the digital components. The five pages after the last

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			page of Lesson 1 (page 48) are the students investigation sheets that correlate with Lesson 1. Page xxx and xxxi list out all of the materials needed and the lessons that the materials should be used in a table. This is true for each of the units. The “Weather and Climate Patterns” unit includes a student reader that is also available in a Spanish version. The reader includes sections such as weather patterns, the water cycle, climate patterns, SEP, careers, and a glossary. On page 11 of the student reader, information is given about climate and its relationship to location on Earth and altitude along with a picture of a mountain and the valley below.
	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**	The materials help students build an understanding of standard operating procedures in a science laboratory. Additionally, each unit provides a safety contract. Each investigation provides teachers with safety guidelines, procedures, and equipment. The “Force and Interactions” unit (page xviii) provides a safety contract for teachers and students to review before beginning the unit. General safety guidelines, such as tie long hair back and tuck in loose clothing, can be found on page XVii. Lesson 1 (page 33-34) provides a “Teacher Prep” that gives teachers safety

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			guidelines, procedures, and equipment for the lesson. The “Life in Ecosystem” unit (page xviii) provides a safety contract for teachers and students to review before beginning the unit. Lesson 2(page 69) provides a “Teacher Prep” that gives teachers safety guidelines, procedures, and equipment for the lesson. Specific safety procedures are also called out within lessons as needed. For example, in the “Forces and Interactions” unit (page 118), a safety note is given to remind students to keep the lid on the container of iron filings. A safety data sheet on iron filings can also be located online.
	7c) The total amount of content is **viable** for a school year.	**No**	The total amount of content is not viable for the school year. The instructional materials contain 3 units with 5 lessons each. The content provided through these 15 lessons is inadequate to provide robust science instruction that involves students in doing science for the full length of the school year. The “180-Day Instructional Pacing Guide” provides guidance on pacing of content by indicating what should be taught each day. To expand the 18 lessons across the school year, the pacing guide devotes approximately half of the total daily science experiences to the extension activities, digital simulations, “Tell Me More” responses, and literacy articles.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			For example, in the "Forces and Interactions" unit there are a total of 14 days devoted to "Tell Me More" questions such as the Lesson 3 "Investigation C" question. The question relating to Lesson 1, "Investigation C," is "Explain why the following sentence is false Gravity only pulls on falling objects." This brief activity may provide opportunity for writing and discussion, but it does not provide enough material to be considered a lesson. A full day's science instruction is an excessive amount of time to allot for such components, which are supplemental in nature and designed to be used at the teacher's discretion. There is not enough material to provide an academic year of quality science instruction for students. This is a missed opportunity to provide additional student learning experiences that support mastery of the performance expectations of the grade level.
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.	**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 assessment opportunities exist within each lesson as students conduct investigations, respond to investigation questions, and respond to "Tell Me More" questions. Students are assessed at the end of each unit using a summative assessment that addresses all of the standards with the unit.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
☒ Yes ☐ No			In the “Weather and Climate Patterns” unit (page 76), ways to formatively assess students for each investigation in Lesson 2 are provided. In the “Life in Ecosystems” unit (page 178), ways to formatively assess students for each investigation in Lesson 5 are provided. In the “Life in Ecosystems” unit, Lesson 1, students identify the components of an ecosystem and recognize the relationship between those organisms. Students are formatively assessed after “Investigation A” by answering a “Tell Me More” question, “Think about your how you interact with your local ecosystem. Describe a positive and a negative way you might affect this ecosystem.” Students are also formatively assessed while completing student investigation sheets such as “Student Investigation, Sheet 1C.” Students are required to make claims about why animal live in groups and support these claims with evidence. Additionally, at the end of each unit a summative assessment is provided with a variety of question types. The “Weather and Climate Patterns” unit includes a summative assessment with fifteen question (multiple choice, short answer, written response) that encompasses all of the standards within the unit. Lesson 5 includes a culminating task (pages 175-181) in which students identify a way to reduce the impact of a natural hazard and evaluate its effectiveness.

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 three dimensions. Students are asked to use DCI, Cross Cutting Concepts and SEP to answer questions and complete tasks. The "Forces and Interactions" unit summative assessment, item 4 addresses standard 3-PS2-2. Students are asked to identify two reasons that a bowling ball would slow down. This requires students to apply understanding of the "Patterns" (CCC) of motion of a rolling ball and predict what will happen as the ball rolls down the lane. The teacher can analyze student responses to assess understanding of the resulting forces the ball would encounter by interacting with objects such as pins (DCI UE.PS2A.c). In the "Weather and Climate Patterns" unit summative assessment #2 addresses standard 3-ESS2-1. Students are asked to "Analyze and Interpret Data"(SEP) from a table that represents the weather conditions at noon on four different days in the winter. This addresses "Disciplinary Core Idea," UE.ESS2D.a as students have to make predictions about weather "Patterns" (CCC) based on the information given in the table.
	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. A general rubric is provided to assess students' performance throughout each

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			unit. For example, the “Weather and Climate Patterns” unit, “Appendix A” (page 210), incorporates specific criteria for the teacher to gauge student mastery, such as, “Student’s responses indicate a higher level of thinking by drawing connections between unit concepts and phenomena.” Instructional materials also include more specific rubrics that give detailed, observable criteria related to a culminating project. For example, in the “Weather and Climate Patterns” unit (page 200), “Teacher Sheet 5B.1” identifies specific criteria related to the students’ claims, evidence, reasoning and solutions. A teacher’s version containing exemplar responses is provided to accompany each “Student Investigation” sheet. In the “Life in Ecosystems” unit, Lesson 4, students analyze a map and chart detailing location of fossils. “Student Investigation Sheet 4B.3” poses questions that require students to analyze and interpret fossil distribution data to provide evidence for their responses. For example, one item prompts students to tell why they think marine trilobite fossils are commonly found on land instead of the ocean floor. This investigation sheet directly correlates to performance expectation 3-LS-4-1 . The instructional materials provide scoring guides for the Summative Assessments at the end of each unit. The Forces and Interactions unit, page 167-170, provides an example of such. On this assessment,

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			item #7 addresses performance expectation 3-PS2-2, "make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion" as the scoring guide points the teacher to look for student responses that mention how playing surfaces produce friction that slow down the ball or puck.

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**	Students have multiple opportunities throughout each unit to develop an understanding and demonstrate application of the three dimensions. SEP, CCC and DCI are taught when needed but most often integrated to deepen student understanding.
	2. Phenomenon-Based Instruction	**Yes**	Although improvement is needed, a majority of the time, observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning. Investigative phenomenon at the lesson level are used to engage students and drive learning for the lesson. Investigative phenomena are related across the unit but could be improved by linking to a larger overarching anchor phenomena.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
	3. Alignment & Accuracy	**Yes**	100% (15 out of 15) of the "Louisiana Student Standards" for grade 3 are incorporated to the full depth of the standard including accurate and up to date scientific information.
	4. Disciplinary Literacy	**Yes**	Materials engage students in speaking and writing about scientific phenomena incorporating vocabulary as needed. Students are asked to execute various tasks including creating models and making claims.
II: Additional Indicators of Quality	5. Learning Progressions	**No**	The instructional materials do not provide a sufficient amount of instructional opportunities for engaging students in robust three-dimensional science instruction over the progression of a full school year.
	6. Scaffolding and Support	**Yes**	There are separate teacher support materials which build teacher knowledge and assist them in providing students with robust, varied learning opportunities to deepen conceptual understanding and develop scientific thinking.
	7. Usability	**Yes**	Text sets, laboratory, and other scientific materials are readily accessible both digitally and through vendor packaging. The laboratory kits are outlined in the unit overview and can be purchased from the company. Each unit includes strategies for establishing safety procedures in the classroom or science lab. However, additional materials and learning opportunities should be included to make the program viable for a school year.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
	8. Assessment	**Yes**	Multiple types of formative and summative assessments are embedded in the instructional units. The assessments include items and tasks designed to measure student mastery of learning targets across the three dimensions.
FINAL DECISION FOR THIS MATERIAL: **Tier II, Approaching 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: **Building Blocks of Science 3D** Grade/Course: **4**

Publisher: **Carolina Biological Supply Company** Copyright: **2019**

Overall Rating: **Tier II, Approaching quality**

Overall Rating: **[Choose one: Tier I, Exemplifies quality; Tier II, Approaching quality; Tier III, Not representing quality]**

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

STRONG	WEAK
1. Three-dimensional Learning (Non-Negotiable)	5. Learning Progressions
2. Phenomenon-Based Instruction (Non-Negotiable)	
3. Alignment Accuracy (Non-Negotiable)	
4. Disciplinary Literacy (Non-Negotiable)	
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, 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 scientific content knowledge and 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. The “Energy Works” unit addresses standard 4-PS4-1. The CCC, “Patterns,” is addressed separately when necessary, but it is most often integrated with the other dimensions to support deeper learning. In Lesson 4, students identify wave patterns, use a series of patterns to send and receive “Morse” code messages, and use a slinky to concretely define patterns. Students use their knowledge of patterns to understand the DCI, energy waves have predictable patterns. They also engage with the science and engineering practice, develop and use a model, as they investigative how waves can change shape and increase energy in a system. At the conclusion of the lesson, students connect the crosscutting concept of patterns in multiple situations as it relates to waves.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			The "Changing Earth" unit addresses standard 4-ESS2-2. The SEP, analyze and interpret data, and DCI are appropriately addressed in the unit. In Lesson 1, "Investigation B," students investigate tectonic plates and discuss the shifting of those plates as evidenced by changes in Earth's structure. Students continue investigating tectonic plates and pair this with the location of volcanoes to make connections between the two (page 42). In "Investigation C," the CCC and DCI are also appropriately addressed. Students identify the causes and noticeable effects of earthquakes and discuss how Earth's mantle causes its plates to move. Throughout the unit the three dimensions are integrated to support deeper learning.
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**	Although improvement is needed, a majority of the time, observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning. For each unit, the instructional materials identify a descriptive narrative and short online video as the anchor phenomenon. While these videos and descriptive narratives offer exposure to scientific content, they do not serve as anchoring phenomena that are puzzling, complex experiences driving the learning that follows.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			While phenomenon-based learning is not evidenced at an anchoring level, at an investigative level, phenomena serve to provide the purpose and opportunity for learning across the majority of lessons. Each lesson begins with a paragraph for the teacher to read aloud to students. Although lacking in variety of format, a majority of the presented investigative phenomena adequately provide opportunity for learning. For example, in the “Plant and Animal Structures” unit Lesson 4, the teacher invites students to think about regular check ups at a doctor visit to assess internal health and to consider what it makes them wonder. Later in the lesson, after dissecting a sheep’s brain, students participate in a class discussion (page 126) in which they use evidence to support a claim that you either can or cannot function without a brain. In doing so, students explain that the brain interprets information received from the senses and controls corresponding actions. This discussion supports the Lesson 4 investigative phenomenon (page 118) that a doctor hits your knee or shines a light in your eye, then observes reactions to determine if your nerves are working properly. In some instances, investigative phenomena provide purpose and opportunity for students to design solutions. For example, in the “Energy Works” unit, Lesson 6, the teacher

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			presents the following as an investigative phenomenon for students to discuss “ In addition to using more renewable energy, we are constantly looking for new ways to develop energy-efficient machinery. Every day, engineers are designing new products that require less energy to function. A few examples include solar-powered charging stations, motion-sensing lights, and LED lights, which are found in many new TVs and car lights.” Through the lesson, this phenomenon supports and drives learning as students become engineers themselves using SEP to create a device and explore ways of improving that device. Students work together to design, test, and improve a device that converts one form of energy to another. Students use an engineering cycle to develop ideas and plan a device (page 212). After constructing the device and testing it students have time to analyze the results and make changes or improvements.
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	A majority, 13 out of 14 or 93%, of Louisiana Student Standards for grade 4 are appropriately addressed by the instructional materials. These standards are addressed to the full depth of the standard and include various opportunities for student learning. Standard 4-ESS2-3 is the only standard that is not addressed by the instructional materials. The “Plant and Animal Structures” unit appropriately addresses standard 4-PS4-2. The “Science and Engineering Practice,”

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			"Developing and Using Models," and DCI are appropriately addressed. In Lessons 5 and 6, students generate and revise a model of an eye. Students use their models to illustrate the movement of light as it moves from a source, is reflected by an object, and enters the eye. The crosscutting concept, cause and effect, is also appropriately addressed. Students investigate how the amount of light in a room impacts the size of a person's pupil and his ability to make sense of objects in the room. The "Changing Earth" unit addresses standard 4-ESS2-1. The SEP, plan and carry out an investigation, and DCI are appropriately addressed. In Lesson 3, students use a stream table to model and investigate how water can shape Earth's landforms. The CCC, cause and effect, is also appropriately addressed. During the investigation, students add vegetation to the stream and discuss how it affects the flow of water and the shape of land. They also make predictions about how erosion by wind and ice might affect landforms.
	REQUIRED **3b)** Science content is **accurate**, reflecting the most current and widely accepted explanations.	**Yes**	All reviewed content was accurate, up-to date and aligned with the most current and widely accepted explanations. No evidence could be found of incorrect or out of date science 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 course or grade-band. 81 % or 13 of 16 standards addressed focus on Louisiana Student

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			Standards for grade 4. Three of the standards that do not fall within the Louisiana standards are 4-PS4-3, 3-5 ETS 1-2, and 3-5 ETS 1 - 3. Although the "Engineering and Technology" standards are included in the program, they enhance teaching and learning and do not distract from the overall learning target.
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 have multiple opportunities to regularly engage with authentic resources that represent the language and style that is used and produced by scientists. Authentic photographs, graphs, and news articles are regularly included in the materials. The "Changing Earth" unit, Lesson 2, includes a photograph that represents the patterns that are created in a rock formation after it's eroded by wind (page 40). The "Energy Works" unit, Lesson 3, includes a photograph that demonstrates energy transfers and transformations in simple circuits (page 89). The "Energy Works" unit, "Interactive Reader," includes a graph that depicts the percentages of energies used in the United States. In the "Changing Earth On-Grade Level Student Reader" (page 23) students can read about the authentic science careers of petrologists, see what petrologists do,

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			and find out how to prepare for a career as a petrologist. Additionally, in the “Plant and Animal Structures On-Grade Level Student Reader” (page 15) students can read about the authentic science career of a biomimicry engineer, see what biomimicry engineers do, and find out how to prepare for a career as a biomimicry engineer. In the “Innovators in Science” section located under the Literacy connections tab within the online platform, students can access articles about scientists that give biographical information and their contributions to science. For example, in the article about Carlos Juan Finlay, students learn about his contribution to the field of medicine through his work related to yellow fever and about the carrier of the disease (mosquitoes) which later led to mosquito abatement programs to control the disease. In the “Changing Earth” unit, Lesson 6, students are assigned a Science in the News Article Report about the negative effects of soil erosion (page 115) which is selected by the teacher from current authentic sources. A rubric is provided in “Appendix B” to assist the teacher in selecting an article that is credible and from a reliable source. In the “Plants and Animals” unit, Lesson 2, students read and respond to Literacy

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			Article 2B, "How Many Stomachs Does it Take?" This nonfiction article explains that different animals have different body structures that help them survive. For example, the cow has a series of four stomachs to help it break down and filter food so that nutrients can be absorbed in the small intestine.
	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 phenomenon and engineering solutions. Students discuss scientific phenomena using authentic sources and use scientific evidence from the sources and investigations to support scientific claims and ideas. The "Energy Works" unit, Lesson 1, begins with a discussion about energy. The teacher poses questions to students such as, "What does it mean when someone says that you have a lot of energy? and Why does your body need energy? " to determine what knowledge students already have. Students discuss how plants and animals get energy and the sun's role in this cycle (page 38). By asking these leading questions, students can begin developing thinking related to the investigative phenomenon for Lesson 1 as stated, "Before a race, coaches tell their runners to eat a healthy meal of pasta, fruits, or vegetables." Materials address the necessity of using scientific evidence to support scientific ideas. For example, in the Energy Works

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			unit, Lesson 2, students discuss, plan, and record the steps to investigate the transfer of energy when a ping pong ball is dropped from different heights (page 56). Students collect evidence and use evidence from the investigation to support a claim that the higher the height from which a ball is dropped, the more stored energy it has to be transferred to motion energy when it is dropped. An increase in motion energy results in a higher bounce when the ball collides with the floor. This claim supports the Lesson 2 "Phenomenon" (page 48) that wind and precipitation may cause rocks to break loose and fall from the sides of steep cliffs. The higher the rock is on the cliff, the more stored energy it has to be transferred into motion energy as it falls. Later, in Lesson 4, "Investigation C," Activity 10 (page 129) of the "Plant and Animal Structures" unit, students use evidence and examples to answer the question, "How do senses and the ability to process information help humans and animals survive?" ("Student Investigation, Sheet 4C, Part F"). After answering in writing, students share their evidence in a group discussion. Student evidence should support the claim that external structures receive information from the senses which transfer that information to an internal structure, the brain. The brain processes the information and tells the organism how to respond in order to survive such as seeing, hearing, or smelling a predator and

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			running in response. Again, this supports the Lesson 4, "Investigative Phenomenon" (page 118) that a doctor hits an external structure, the outside of your knee. Your sense of touch sends a message to your brain which tells your leg how to respond, kick. This helps students understand that internal and external structures function effectively under certain conditions. If there is damage to an external structure that prevents an organism's senses from collecting information or damage to an internal structure that might prevent the brain from processing the information, then the organism will not know how to respond or will not do so effectively and may die.
	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, completing investigations, making claims, and designing solutions to problems. In the "Plant and Animal Structures" unit, students observe what changes take place as a piece of celery is placed in a cup of water with dye (page 94) and construct explanations about how the internal structures of the plant function. Students investigate the internal structures of plants as they dissect a flower (page 97). In the "Changing Earth" unit, students design a solution and develop a model to prevent soil erosion (page 116). In the

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			Plant and Animal Structures unit, students produce solutions to problems by creating a model of a more powerful human eye (pages 179-180). In the “Energy Works” unit, “Investigation 2, Part C” (page 60), students conduct an investigation to observe the changes in energy as two marbles are rolled into each other. In item 6 of “Student Investigation, Sheet 2C,” students make a claim about the total energy in this system and use evidence from observations to support claims.
	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.	**Yes**	Vocabulary is presented at the beginning of each unit as part of the teacher notes and addressed within the unit as needed. Students build an understanding of terms through investigations, and then the teacher introduces terms and verifies that students have an understanding of them. In the “Energy Works” unit, students develop an understanding of “stored energy” and “motion energy” as they observe a stationary object move and fall to the ground (page 52). In the “Plant and Animal Structures” unit, Lesson 2, students create a chart with two columns labeled vertebrates and invertebrates after a discussion of the skeletal system. The teacher gives examples of animals that have endoskeletons (wolves and elephants) and exoskeletons (beetles and crabs) and asks students to develop a definition for each term in their own words (page 54-55).

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			In the "Changing Earth" unit, Lesson 1, Activity A, the teacher uses the "Earth's Layers Simulation" (page 37) to introduce the layers of the Earth crust, mantle, core. To increase their understanding of this new vocabulary, students then make a model to represent the layers (page 38).
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.	**No**	The progression of learning is not coordinated and organized over time in a manner that supports student mastery of the performance expectations. The instructional units fail to include enough material for engaging students in robust three-dimensional science instruction over the progression of a full school year; therefore, students do not have an adequate amount of learning opportunities to fully engage with the grade level standards to build the understanding and proficiencies required to master the associated performance expectations. See indicator 7c.
	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.	**No**	The materials present some opportunity for students to apply mathematical thinking. Math skills beyond the grade level's expectations in the Louisiana Student Standards for Mathematics are introduced. For example, in the "Plant and Animal Structures" unit, Lesson 5, the "Eye Measurements" activity (page 167) calls for students to convert values representing measurements of animal eye

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			circumferences to various other metric units (mm, cm, and km). The activity also calls for students to then write expressions comparing these values. The materials identify “0.00027 km > 24 mm” as one sample student response. This is beyond the mathematics grade level expectation to compare two decimals to hundredths by reasoning about their size (4.NF.C.7). Also, conversion within a system of units in grade 4 is limited to one step conversions (4.MD.A.1).
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, including teacher background prior to each lesson, notes within the margins to identify and address student misconceptions and rubrics to assess student readiness. Each lesson overview includes content related to the DCI to support the development of teachers’ background knowledge. In the “Changing Earth” unit, Lesson 1 (page 36), teachers are given information about plate tectonics, parts of the Earth's crust, and how the movement of those plates causes changes in the Earth prior to teaching the lesson which is centered on this content. Supports to help teachers identify and address misconceptions are also included. In the Plants and Animals unit, Lesson 3, teachers are advised to dispel the misconception that seeds are only found in plants that produce fruit (page 88). In the “Energy Works” unit, Lesson 4, teachers

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			are advised to address the misconception that water waves move from side to side (page 134). Rubrics are included within the materials to help teachers assess mastery of content and performance on the culminating project at the end of each unit. In the "Changing Earth" unit Appendix A (page 142) teachers have access to a general rubric that addresses the areas of exploration, vocabulary, concept development and the science notebook. This rubric can be used to determine if students are mastering these areas at the end of each lesson. More specific rubrics can be found at the end of each unit and are related to the culminating task. For example at the end of the "Energy Works" unit Lesson 6 , students design and complete an energy experiment to answer student generated questions. Teachers can use "Teacher Sheet 6C, My Energy Experiment Rubric" to assess the group's planning, conclusion and overall presentation.
	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 are given to support diverse learners and ensure that all students master the content. A "Differentiation Strategies" section is included at the beginning of each unit (page xiv). Here teachers can find suggested strategies and resources for differentiation of instruction.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			A Scaffolding chart is additionally provided in each unit to help teachers gauge each student's achievement level (page xxii-xxiii). Finally, content specific strategies are called out in the margins of the “Teacher’s Manuals” (page numbers vary). In the “Changing Earth” unit, the “Plant and Animals Structures” unit, and the "Energy Works" unit it is recommended that teachers differentiate labs by grouping students by ability and/or by modifying the investigation procedures. It is additionally suggested that teachers incorporate literacy and digital components to deepen understanding and help students make real-world connections (page xvi). Teachers can utilize the “Evidence of Instructional Scaffolding” section, which provides specific outcomes that students should achieve as they progress through the unit, to gauge students understanding of concepts. For example, in the “Energy Works” unit (page xxii) after teaching Lesson 2 and engaging in investigations using ping pong balls and marbles to observe and record the results of changes in motion, students should know and understand that energy can exist as stored or motion energy which exists in many forms and that motion and energy are related. It is suggested that students who master the concept quickly be provided a leadership role in the lesson or an opportunity for independent study while

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			additional practice and review is provided to students who need additional support. Suggestions on how to support students are also include in the margins of the teacher's manual. For example, in the "Changing Earth" unit, Lesson 1, "Investigation B, Teaching Tip," advises teachers to review continents before introducing tectonic plate boundaries (page 40). A "Differentiation Strategy" is also included, which suggests that students color continents to better identify them and their boundaries (page 40). Also, in the "Energy Works" unit, Lesson 1, students identify energy sources and describe ways energy is used. Within the margin of the teacher's manual, teachers are instructed to ask students to draw a picture or perform a skit to define the term energy instead of writing a definition (page 41) .
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**	Student text, laboratory sheets, and other scientific materials are readily available through vendor packaging. Students may access student readers and interactive readers online through the vendor portal. Student laboratory sheets, investigation sheets, and literacy articles are available in PDF format and online through the vendor portal. Scientific materials that are needed for experiments are listed, and most are included in vendor packaging according to the supply lists included within the teacher's manual.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			For example, in the “Changing Earth” unit, a list of Kit Materials is provided on page xxxi. Some of the listed materials include clay, craft dough, soil, fluted catch pan, marbles, and casting powder. Student Readers are provided for each unit. For example, in the “Energy Works” unit, a below grade level and on grade level reader are provided entitled, “Energy Works” (page xxxi). Literacy articles are found in each unit. For example, in the “Plant and Animal Structures” unit, “Literacy and Science Article 2A, All About Squid” is found on page 65 and “Literacy Article 2B, “How Many Stomachs Does it Take?” is found on page 69. Student Investigation Sheets are provided in each unit. For example, in the “Changing Earth” unit “Student Investigation Sheet 2A, “What types of Rocks Exit?” is included to help students record the texture and color of various rocks (page 61). “Student Investigation Sheet 2B, “What is the Rock Cycle?” helps students organize the events that transpire as rock changes form (page 62).
	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**	The materials help students build an understanding of standard operating procedures in a science laboratory and include safety guidelines, procedures, and equipment. Each unit includes strategies for establishing safety procedures in the classroom or science lab, as well as a

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			safety contract. For example, within the “Plant and Animal Structures” unit a safety contract can be found on page xviii. On page xvii, the text suggests that teachers create a chart titled “Safety Rules for the Science” lab and facilitate a class discussion to record these rules. Safety procedures are also called out as needed within lessons. For example, in the Changing Earth unit, students model sedimentary and metamorphic rocks using crayon shavings. When students are working with hot water A Safety Tip (page 55) is provided stating, “Tell students to exercise caution when handling hot water. Students should handle the aluminum foil and avoid contact with the water.” The “Plant and Animal Structures” unit, Lesson 4, includes a “Teacher Preparation” note that instructs teachers to review the “Safety Data Sheet for Specimens,” which is located at www.carolina.com before handling the sheep brain specimen (page 120). Outlined within Lesson 4, “Investigation B, Activities 5 and 6” (page 126) safety tools and procedures are again discussed with students. Teachers are instructed to, “Direct all students to put on the gloves, aprons, and safety goggles and gather around the location you selected for the sheep brain dissection. Model safety by wearing gloves, an apron, and safety goggles yourself.”
	7c) The total amount of content is **viable** for a school year.	**No**	The total amount of content is not viable for the school year. The instructional

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			materials contain 3 units with 6 lessons in each. The content provided is inadequate to provide robust science instruction that involves students in doing science for the full length of the school year. The “180-Day Instructional Pacing Guide” provides guidance on pacing of content by indicating what should be taught each day. To expand the 18 lessons across the school year, the pacing guide devotes approximately half of the total daily science experiences to the extension activities, digital simulations, “Tell Me More” responses, and literacy articles. For example, in the “Plant and Animal Structures” unit, there are a total of 14 days devoted to “Tell Me More” questions such as the Lesson 5, “Investigation A” question. The question, “Explain the importance of the retina. What would happen if the retina were damaged?” does provide opportunities for writing and discussion, but does not provide enough material to be considered a lesson. A full day’s science instruction is an excessive amount of time to allot for such components, which are supplemental in nature and designed to be used at the teacher’s discretion. There is not enough material to provide an academic year of quality science instruction for students. This is a missed opportunity to provide additional student learning experiences that support mastery

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			of the performance expectations of the grade level.
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 assessment formative and summative are in the instructional materials. Formative assessment opportunities exist within each lesson as students conduct investigations, respond to investigation questions, and respond to "Tell Me More" questions. Students are formally assessed at the end of each unit using a summative assessment that addresses all of the standards with the unit. In the "Energy Works" unit, Lesson 3, "Investigation C," students use SEP to conduct three investigations. Students respond to questions on "Student Investigation," pages 3C.1, 3C.2, and 3C.3. While investigating energy transformations within this investigation, students interact with circuits and identify the effects of the change in energy within the system. Before the investigation, students are asked to make predictions with questions such as, "How will the energy in the circuit change if more batteries are added?" and "How can I determine how the mystery box works?". Students plan and investigate, observe and record, and then draw conclusions from the investigation by answering questions such as, "What evidence can we use to describe that energy was transferred in this system?".

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			At the end of the unit students take a summative assessment that includes all content from the unit and complete a culminating project in lesson 6 of each unit. At the end of the "Plant and Animal Structures" unit, students complete a summative assessment including fourteen questions based on the three standards (4-LS1-1, 4-LS1-2, and 4-PS4-2) within the unit. Students also complete a culminating project at the end of each unit. For example, at the conclusion of the "Changing Earth" unit, Lesson 6, Investigation B (pages 117-118), students generate a model to test solutions that prevent erosion. In Lesson 6, Investigation C (pages 118-119), students present their solutions with the class. Teachers may use the Presentation Rubric to assess student understanding.
	REQUIRED **8b)** Assessment items and tasks are structured on integration of the **three-dimensions**.	**Yes**	Assessment items and tasks are structured on integration of three dimensions. Students are asked to use DCI, Cross Cutting Concepts and SEP to answer questions and complete tasks. For example, on the summative assessment within the "Changing Earth" unit, item 10 asks students to identify two variables in an experiment in which a student models how deltas form with a stream table. This item addresses standard 4-ESS2-1 and encompasses the SEP of "Planning and Carrying Out Investigations" and the CC of "Cause and Effect." The "Energy Works" unit summative

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			assessment item 3, “Match each action below with the energy transformation that makes it happen,” requires students to use DCI (DCI UE.PS3.B.c) and the Cross Cutting Concept (“Cause and Effect”). The “Plant and Animal Structures” summative assessment question 6 addresses standard 4-LS1-1 and asks students to analyze and interpret data (illustrations of turtles) and explain which animal has adapted to the ocean (SEP constructing explanations). For example, in the “Plant and Animal Structures” unit, Lesson 2, students read a literacy article, “All About Squid” and respond to questions related to the content. Students “Engage in Argument [Using] Evidence” (SEP) that squid have internal and external structures that help them survive and grow (DCI UE.LS1.A.a). While addressing standard 4-ESS1-1 in the “Changing Earth” unit Lesson 2 “Investigation A,” students are given several types of rocks. Students are then able to “Analyze and Record Data” (SEP) in a table on “Student Investigation, Sheet 2A” to determine the texture and color of each rock they are observing. Students are then prompted to look for “Patterns” (CCC) through the suggested teacher question, “Do you notice any patterns between rock type and color or texture?”. In the “Energy Works” unit Lesson 2, students respond to the “Tell Me More” writing prompt “If you park your car in the sunlight for a long time, the seats might

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			become very hot. Explain this in terms of energy transfer." This question requires students to use the SEP "Constructing Explanations" and apply knowledge about how energy transfers from place to place (DCI UE.PS3B.c) in the context of the "Crosscutting Concept" of "Energy and Matter."
	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. A general rubric is provided to assess students' performance throughout each unit. For example, the "Energy Works" unit, "Appendix A" has a general rubric that measures exploration, vocabulary, concept building, and the science notebook. Instructional materials also include more specific rubrics that gives detailed, observable criteria related to the culminating project. For example, in the "Plant and Animal Structures" unit students create an eye model and the teacher uses the eye model rubric on Teacher sheet 6B to assess students on presentation, model and the description students give. In the "Changing Earth" unit, a rubric provided on "Teacher Sheet 6C" is included to measure student performance on a design solution task in which students are required to generate and test multiple solutions that prevent the problem of erosion. This rubric is specifically aligned

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			with performance expectation 4-ESS3-2. A Teacher's version containing exemplar responses is provided to accompany each Student Investigation sheet.

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**	Students have multiple opportunities throughout each unit to develop an understanding and demonstrate application of the three dimensions. SEP, CCC and DCI are taught when needed but most often integrated to deepen student understanding.
	2. Phenomenon-Based Instruction	**Yes**	Although improvement is needed, a majority of the time, observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning. Investigative phenomenon at the lesson level are used to engage students and drive learning for the lesson. Investigative phenomena are related across the unit but could be improved by linking to a larger overarching anchor phenomena.
	3. Alignment & Accuracy	**Yes**	93% (13 out of 14) of the "Louisiana Student Standards" for grade 4 are incorporated to the full depth of the standard including accurate and up to date scientific information.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
	4. Disciplinary Literacy	**Yes**	Materials engage students in speaking and writing about scientific phenomena incorporating vocabulary as needed using authentic sources. Students are asked to execute various tasks including creating models and making claims.
II: Additional Indicators of Quality	5. Learning Progressions	**No**	The instructional materials do not provide a sufficient amount of instructional opportunities for engaging students in robust three-dimensional science instruction over the progression of a full school year.
	6. Scaffolding and Support	**Yes**	There are separate teacher support materials which build teacher knowledge and assist them in providing students with robust, varied learning opportunities to deepen conceptual understanding and develop scientific thinking.
	7. Usability	**Yes**	Text sets, laboratory, and other scientific materials are readily accessible both digitally and through vendor packaging. The laboratory kits are outlined in the unit overview and can be purchased from the company. Each unit includes strategies for establishing safety procedures in the classroom or science lab. However, additional materials and learning opportunities should be included to make the program viable for a school year.
	8. Assessment	**Yes**	Multiple types of formative and summative assessments are embedded in the instructional units. The assessments include items and tasks designed to

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			measure student mastery of learning targets across the three dimensions.
FINAL DECISION FOR THIS MATERIAL: **Tier II, Approaching 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: **Building Blocks of Science 3D** Grade/Course: **5**

Publisher: **Carolina Biological Supply Company** Copyright: **2019**

Overall Rating: **Tier II, Approaching quality**

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

STRONG	WEAK
1. Three-dimensional Learning (Non-Negotiable)	5. Learning Progressions
2. Phenomenon-Based Instruction (Non-Negotiable)	
3. Alignment Accuracy (Non-Negotiable)	
4. Disciplinary Literacy (Non-Negotiable)	
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, 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 scientific content knowledge and 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 "Structures and Properties of Matter" unit, students begin Lesson 1 (pages 38-58) by creating a working definition of matter through discussion and the states of matter as the teacher demonstrates the three states of matter. Students engage in the SEP by make observations to distinguish the differences between the three states of matter (page 40). Students plan, calculate the volume and mass of various objects using standard units which addressed the CCC (wax block, marbles, water , and modeling clay), and analyze that data (page 43). Finally, students investigate the mass and volume of a gas by using a balloon and a scale addressing the SEP. Throughout this investigation, students take a variety of measurements to identify various

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			properties of matter which addresses the DCI UE.PS1.A.c. In the "Earth and Space Systems" unit, Lesson 3 previews the following 3D elements to support Performance Expectation 5-ESS1-2 SEP (Analyzing and Interpreting Data, Developing and Using Models, Engaging in Argument from Evidence), DCI (ESS1B Earth and the Solar System), and CCC (Patterns and Scale, Proportion, and Quantity). In investigations A, B, and C (pp 91-102) students connect to CCC as they explore the relationship between the Sun, Moon, and Earth and its effect on both the Moon and Earth which supports the DCI dealing with orbits of Earth around the Sun and of the Moon around Earth. SEPs are realized as students analyze and interpret data when graphing the amount of daylight to look for patterns then develop a model of the phases of the moon and engaging in argument from evidence for what causes patterns of daylight. In the "Matter and Energy in Ecosystems" unit, on pages 43-44 energy and matter (CCC) is addressed as students are asked to design and complete an investigation to determine how plants get energy. Organization for matter and energy flow in organisms (DCI) is addressed on pages 41-42 as students investigate photosynthesis and how plants receive energy from air and water. Asking questions and defining

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			problems (SEP) is addressed on the same pages as students investigate how plants grow and then again on pages 43-44 as students ask questions among their groups to design an investigation to determine how plants grow.
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**	While phenomenon-based learning is not evidenced at an anchoring level, at an investigative level, phenomena serve to provide the purpose and opportunity for learning across the majority of lessons. Each lesson begins with a paragraph for the teacher to read aloud to students. Although lacking in variety of format, a majority of the presented investigative phenomena adequately provides opportunity for learning. In the "Earth and Space Systems" unit, Lesson 3, the investigative phenomena compares the amount of light during the day in the spring and the fall seasons. It also discusses how the shape of the moon changes throughout a months period. Students engage in investigations driven by this phenomenon, by building models of the earth, moon, and sun while looking for patterns. Students discuss, while building their models, how light might be affected during the day in different points in the Earth’s path around the sun. Students also investigate, through this model, the different phases of the moon. In the "Matter and Energy in Ecosystems" unit Lesson 6, the investigative

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			phenomenon is as follows: Composting is more common today and research shows that people who plant gardens using homemade compost have more success than those who use store-bought fertilizer. However, not all trash is good for composting—what does this make you wonder?(p 168) Teachers are provided examples of questions that should be expected from students (p 168). This frames the investigations that follow A--Can We Develop Solutions to Decrease Human Impact? (pp 171-172); B—"Can I Communicate Solutions for Human Impact? (pp 172-173).
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**	All of Louisiana Student Standards for grade 5 are appropriately addressed by the instructional materials. These standards are addressed to the full depth of the standard and include various opportunities for student learning. The "Structures and Properties of Matter" unit appropriately addresses standard 5-PS1-1. The science and engineering practice, engaging in argument from evidence, cross-cutting concept of cause and effect, and DCI are appropriately addressed. Students begin observing a demonstration of the three states of matter (pages 66-67), inferring that the observed changes such as squeezing a balloon or pouring liquids into different containers relate to particles too small to be seen (CCC). As students observe

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			changes in the state of water, it is clear that energy is added to the water particles (DCI) to cause the change. Students use marbles to develop a model of what particles look like within matter in the various states (SEP, PE) and then create a drawing of this model (page 69). In the “Matter and Energy in Ecosystems” unit, the performance expectation 5-ESS2-1 is addressed as students draw a model of the four spheres of the earth and how they interact with each other. Through this students “develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.” Students further develop and draw a model of the four spheres (SEP) and explain how the four spheres interact with one another (DCI and CCC).
	REQUIRED **3b)** Science content is **accurate**, reflecting the most current and widely accepted explanations.	**Yes**	All reviewed content was accurate, up-to date and aligned with the most current and widely accepted explanations. No evidence could be found of incorrect or out of date science 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 course or grade-band. 87 % or 13 of 15 standards addressed focus on Louisiana Student Standards for grade 5. Two of the standards that do not fall within the Louisiana standards are 3-5 ETS 1-2 and 3-5 ETS 1 - 3.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			Although the "Engineering and Technology" standards are included in the program, they enhance teaching and learning and do not distract from the overall learning target
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 sources that represent the language and style that is used and produced by scientists including authentic photographs, diagrams, news articles and non-fiction articles. The "Earth and Space Systems" unit includes images and diagrams. A scaled image of the Earth and sun is included on "Teacher Sheet 1B" and a diagram of the Sun, Moon, Earth System on "Teacher Sheet 1C." Within the Interactive Reader, students are exposed to authentic photographs. While describing the biosphere and geosphere, pictures of parrots and lava flow are used (pages 7 and 9). In the "Structure and Properties of Matter" unit, Lesson 6, students are assigned a "Science in the News" article report about water quality or wastewater treatment facilities (page 173), which is to be selected by the teacher from current authentic sources. A rubric is provided in "Appendix B" to assist the teacher in selecting an article that is credible and from a reliable source.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			In the “Matter and Energy in Ecosystems” unit, Lesson 5, “Literacy Resources The Amazing Potato,” the potato is examined as a major part of American food consumption and as an important part of an individual’s diet, especially as an energy source. The article examines the history and classification of the potato and introduces its parts. Questions for students invite them to reflect on why potatoes are popular, the best habitat for potatoes, and why they are good energy sources (p 138). In the “Innovators in Science” section located under the “Literacy connections” tab within the online platform, students can access non-fiction articles about scientists that give biographical information and their contributions to science. For example, this section contains an article about Hugh Herr and his contributions to the world of prosthetic limbs. The article tells how, by combining technology and the mechanics of prosthetic limbs, he became a leader in the field of biomechatronics. Links to additional articles about Hugh Herr and his work are also included.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
	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 phenomenon and engineering solutions. Students discuss scientific phenomena using authentic sources and use scientific evidence from the sources and investigations to support scientific claims and ideas. In the “Earth and Space Systems” unit, "Student Investigation", "What Can I Learn From the Brightness of a Star?" (page 62), students must make a claim, provide evidence, and then reason to justify why the evidence supports the claim based on the investigation about the Sun. In the “Structures and Properties of Matter” unit, Lesson 5, students write and speak about the phenomenon of chemical and physical change. Students discuss physical and chemical change while engaging with modeling clay and burned paper (page 153). Students complete a chart listing evidence of chemical and physical changes (page 154). The “Tell me More” question, “Would a chemical Change occur if we placed dough in the freezer?” requires students to write a response using evidence from the investigation. In “Matter and Energy in Ecosystems" unit, Lesson 1, “Investigation C,” students design and complete an investigation to determine what plants need to grow. As they carry out that investigation, they collect data based on what they see from

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			the investigation they designed. This investigation links directly back to the investigative phenomena video. In the video, they discuss how animals and plants get their energy and that they need energy to grow and survive (pages 43-44).
	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, drawing conclusions, conducting tests, and designing solutions to problems. In the “Matter and Energy in Ecosystems” unit, Lesson 1, students observe plants as they grow and record data such the height of the plant (page 44). In “Matter and Energy in Ecosystems” unit, Lesson 5, “Human Impact, Investigation C” (141-142), students simulate water pollution in their ecocolumn through a focus on a specific variable. Students first predict, then collect and analyze data, come to a conclusion, and then develop ways to limit water pollution in the real world. In the “Structure and Properties of Matter” unit, Lesson 2, “Energy and States of Matter, Investigation A” (pp 66-69) students are challenged to create a model that will accurately demonstrate the movement and attraction of particles in

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			each state of matter using a specific array of materials then share and explain. In the “Structure and Properties of Matter” unit, Lesson 6, students are asked to design and test a water filtration system (page 174). In the “Earth and Space Systems” unit, Lesson 2, "Investigation A", students are performing a task to determine why some stars appear brighter in the nighttime sky. This links back to the investigative phenomena, which has students discussing what they see when they go out at night and look at the sky. This would further have students asking why some stars appear brighter than others.
	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.	**Yes**	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. In the “Matter and Energy in Ecosystems” unit, Lesson 4, “Investigation C, What Is an Ecocolumn?” (pp 113-114), the teacher facilitates a review of the spheres of Earth while discussing how energy is cycled through an ecosystem. Students are then given an example of a common or local reference of an ecosystem. The term

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			"ecocolumn" is then introduced as a small model of an ecosystem. In the "Earth and Space Systems" unit, Lesson 3, "Investigation B", students observe patterns of the moon phases. This very naturally has students using the vocabulary linked to this investigation-moon, moon phase, waning, and waxing-without teaching it in isolation. The vocabulary is not addressed individually, but within the investigation, giving students a deeper understanding of the vocabulary (pages 94-96). In the "Structure and Properties of Matter" unit, Lesson 2, the teacher demonstrates changes in the state of water by boiling and freezing water. After a discussion of the students' observations, a definition for freezing point, melting point , and boiling point is written in the science notebook (page 68).
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	**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.	**No**	The progression of learning is not coordinated and organized over time in a manner that supports student mastery of the performance expectations. The instructional units fail to include enough material for engaging students in robust three-dimensional science instruction over the progression of a full school year; therefore, students do not have an adequate amount of learning

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
content complements the the Louisiana Student Standards for Math. ☐ Yes ☒ No			opportunities to fully engage with the grade level standards to build the understanding and proficiencies required to master the associated performance expectations. See indicator 7c.
	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 applicable grade's expectations in the Louisiana Student Standards for Mathematics. In the "Structure and Properties of Matter" unit, Lesson 1, "Investigation B", students are asked to find volume. (5.MD.5b) In the "Structures and Properties of Matter" unit, Lesson 5 (page 158), students are asked to solve word problems involving liquid measure in milliliters. This addresses standard 5MDC.5, relate volume to the operations of multiplication and division and solve word problems involving volume, and is called out specifically within the unit overview.
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 including teacher background knowledge, information on the 5E teaching framework, teacher preparation notes, and guidance to address student misconceptions. In the "Structures and Properties of Matter" unit, teachers are given background information about chemical changes such as paper burning, vinegar

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
☒ Yes ☐ No			and baking soda and, iodine and potatoes prior to teaching the lesson (page 151). This information helps teachers guide students during the investigation. In the "Matter and Energy in Ecosystems" unit, pages 60-61 gives two pages of teacher background information about food chains, producers, owl pellets and other background information needed to teach the lesson. In the "Matter and Energy in Ecosystems" unit, Lesson 3, a digital tip to address multiple opportunities is provided. In Lesson 3, the teacher is asked to facilitate a class discussion about food webs and draw comparisons between the habitats. The digital tip provided to help prepare students for the next investigation says to share the "Energy Cycles" simulation with the class and challenge students to think about how energy cycles through an ecosystem.
	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 are given to support diverse learners and ensure that all students master the content. A "Differentiation Strategies" section is included at the beginning of each unit (page xiv). Here teachers can find suggested strategies and resources for differentiation of instruction.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			A scaffolding chart is additionally provided in each unit to help teachers gauge each student's achievement level (page xxii-xxiii). Finally, content specific strategies are called out in the margins of the “Teacher’s Manuals” (page numbers vary). In the “Energy in Ecosystems” unit, Lesson 2 (pages 60-6), teachers are given an entire page of background information about the topic being taught. This can be found within each of the lessons. “Structure and Properties of Matter,” Lesson 4, “Differentiation Strategy” (page 122), “Investigation B,” the teacher is asked to review a chart, explaining that students investigated solubility then defining solubility as well as solute and solvent. The suggested differentiation strategy on page 124 challenges students to consider how the amount of each material will affect the ability to create a solution. Examples are provided—a large sugar cube will not dissolve in water as quickly as a packet of sugar crystals and if a small amount of water is added to a large amount of salt, only a small amount of salt will dissolve.
Additional Criterion **7. USABILITY:** Materials are easily accessible, promote safety in the science classroom, and are viable for	**REQUIRED** **7a)** Text sets (when applicable), laboratory, and other scientific materials are **readily accessible** through vendor packaging.	Yes	Student text, laboratory sheets, and other scientific materials are readily available through vendor packaging. Students may access student readers and interactive readers online through the vendor portal. Student laboratory sheets, investigation

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
implementation given the length of a school year. ☒ Yes ☐ No			sheets, and literacy articles are available in PDF format and online through the vendor portal. Aside from the literacy reader and literacy articles, teachers may choose to find (or, depending on grade level, ask students to find) a reading or current event article to use as an extension literacy activity. A guide for finding grade-level appropriate articles and a student report template are included in “Appendix B” of the Teacher’s Guide. The Structure and Properties of Matter unit includes a student reader that is also available in a Spanish version. The reader includes sections such as matter, states of matter, hardness, mixtures and solutions and engineering practices, careers, and a glossary. On page 15 of the student reader information is given about chemical change along with a photograph of a rusting car and fireworks. In the “Earth and Space Systems” unit, page xxi, a description is given about each of the digital components offered in the unit along with information to access the digital components. Student “Investigation Sheets” that correlate with each lesson/investigation are found after each lesson. Page xxx and xxxi list out all of the materials needed and the lessons that the materials should be used in a table. This is true for each of the units.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
	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. The “Matter and Energy in Ecosystems” unit (page xviii) provides a safety contract for teachers and students to review before beginning the unit. Lesson 2 (page 60) provides a “Teacher Prep” that gives teachers safety guidelines, procedures, and equipment for the lesson. General safety guidelines, such as tie long hair back and tuck in loose clothing, can be found on page XVii. Specific safety procedure are also called out within lessons as needed. For example, in the “Structure and Properties of Matter” unit a safety note is given (page 140) to remind students to use a plastic bag around the magnetic wand when using the iron filings so that the magnet can be removed and the bag turned inside out. A safety data sheet on iron filings can also be located online.
	7c) The total amount of content is **viable** for a school year.	**No**	The total amount of content is not viable for the school year. The instructional materials contain 3 units. The Structure and "Properties of Matter" and "Matter and Energy In Ecosystems" units include 6 lessons each, and the "Earth and Space" unit includes 5 lessons. The content

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			provided through these 17 lessons is inadequate to provide robust science instruction that involves students in doing science for the full length of the school year. The "180-Day Instructional Pacing Guide" provides guidance on pacing of content by indicating what should be taught each day. To expand the 17 lessons across the school year, the pacing guide devotes approximately half of the total daily science experiences to the extension activities, digital simulations, "Tell Me More" responses, and literacy articles. For example, in the "Structure and Properties of Matter" unit, there are a total of 14 days devoted to "Tell Me More" questions such as Lesson 1, "Investigation C" question, "All matter is made up of particles that are too small to be seen. Think of ice, water, and water vapor. Are these composed of different particles?" This does not provide enough material to be considered a lesson. A full day's science instruction is an excessive amount of time to allot for such components, which are supplemental in nature and designed to be used at the teacher's discretion. There is not enough material to provide an academic year of quality science instruction for students. This is a missed opportunity to provide additional student learning experiences that support mastery

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			of the performance expectations of the grade level.
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 assessment opportunities exist within each lesson as students conduct investigations, respond to investigation questions, and respond to "Tell Me More Questions". Students are assessed at the end of each unit using a summative assessment that addresses all of the standards with the unit. In the “Matter and Energy in Ecosystems” unit, students are formatively assessed throughout the unit in each investigation in the form of “Student Investigation” sheets. At the end of this unit and each unit, a summative assessment is provided to assess the students. In Lesson 6, students complete a performance task as a culminating activity to wrap up the entire unit. In “Structure and Properties of Matter,” Lesson 1 (page 48) instructs to use students’ responses to the “Tell Me More” question to determine if they can measure volume and recognize that water displacement is a measure of volume. Students are summatively assessed using a summative assessment and culminating task at the end of each unit. The “Earth and Space Systems” unit includes a

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			summative assessment with fifteen questions (multiple choice, short answer, written response) that encompasses all of the standards within the unit. Lesson 5 includes a culminating task (pages 180-184) in which students research activities that have effects on the environment and create a public service announcement about the ways this event changes the local habitat.
	REQUIRED **8b)** Assessment items and tasks are structured on integration of the **three-dimensions**.	Yes	Assessment items and tasks are structured on integration of three dimensions. Students are asked to use DCI, Cross Cutting Concepts and SEP to answer questions and complete tasks. The “Matter and Energy in Ecosystems” unit summative assessment addresses the three dimensions of the unit standards. Item 7 addresses 5-ESS2-1. Students are asked to list and describe how water from a lake creates a pond on a mountainside (CCC, Systems and System Models). Students must apply knowledge of the water cycle through interaction of Earth’s materials and systems (DCI UE.ESS2A.b) In the “Structure and Properties of Matter” unit, number 14 on the summative assessment is structured on an integration of the three dimensions The question calls for students to “Analyze and Interpret Data” (SEP) from a table to determine which substance(s) and temperature will most likely cause ice cream to form the

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			fastest (CCC Cause and Effect, DCI UE.PS1B.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. Scoring guidelines are included with each student investigation sheet and summative assessment. In the "Earth and Space Systems" unit, Lesson 3 asks students to investigate changes in daylight and the appearance of the moon. "Student Investigation, Sheet 3A2" asks students to graph the amount of daylight which directly correlates to standard 5-ESS1-2, represent data to reveal patterns of daily changes in length and direction of shadows...stars in the sky. "Matter and Energy in Ecosystems Literacy Article 4A, Every Member Counts," includes expected student responses to questions posed as well as items to be included in student claims, evidence, and reasoning "Structure and Properties of Matter Science" in the "News Credibility Rubric" that includes author, source/publisher, update frequency, opinion/bias, science impact, and an area for the student to explain whether they feel the article is credible or not. A general rubric is provided to assess students' performance throughout the

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			unit, and a more specific rubric is included at the end of each unit that gives detailed observable criteria related to the culminating project.

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**	Students have multiple opportunities throughout each unit to develop an understanding and demonstrate application of the three dimensions. SEP, CCC and DCI are taught when need but most often integrated to deepen student understanding.
	2. Phenomenon-Based Instruction	**Yes**	Although improvement is needed, a majority of the time, observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning. Investigative phenomenon at the lesson level are used to engage students and drive learning for the lesson. Investigative phenomena are related across the unit but could be improved by linking to a larger overarching anchor phenomena.
	3. Alignment & Accuracy	**Yes**	100% (13 out of 13) of the "Louisiana Student Standards" for grade 5 are incorporated to the full depth of the standard including accurate and up to date scientific information.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
	4. Disciplinary Literacy	**Yes**	Materials engage students in speaking and writing about scientific phenomena incorporating vocabulary as needed. Students are asked to execute various tasks including creating models and making claims.
II: Additional Indicators of Quality	5. Learning Progressions	**No**	The instructional materials do not provide a sufficient amount of instructional opportunities for engaging students in robust three-dimensional science instruction over the progression of a full school year.
	6. Scaffolding and Support	**Yes**	There are separate teacher support materials which build teacher knowledge and assist them in providing students with robust, varied learning opportunities to deepen conceptual understanding and develop scientific thinking.
	7. Usability	**Yes**	Text sets, laboratory, and other scientific materials are readily accessible both digitally and through vendor packaging. The laboratory kits are outlined in the unit overview and can be purchased from the company. Each unit includes strategies for establishing safety procedures in the classroom or science lab. However, additional materials and learning opportunities should be included to make the program viable for a school year.
	8. Assessment	**Yes**	Multiple types of formative and summative assessments are embedded in the instructional units. The assessments include items and tasks designed to

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			measure student mastery of learning targets across the three dimensions.

FINAL DECISION FOR THIS MATERIAL: **Tier II, Approaching quality**

Reviewer Information

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, Desoto, East Baton Rouge, Einstein Charter Schools, Iberia, InspireNOLA, Jefferson, Lafayette, Lincoln, Livingston, Orleans, Ouachita, Rapides, Recovery School District, RSD - Choice Foundation, RSD – FirstLine, RSD – NOCP, St. Charles, St. James, St. Mary, St. Tammany, Tangipahoa, Vermilion, West Baton Rouge, Zachary. This review represents the work of current classroom teachers with experience in grades K-5.

Appendix I.

Publisher Response

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: **Building Blocks of Science 3D**

Grade/Course: **K-5**

Publisher: **Carolina Biological Supply Company**

Copyright: **2019**

Overall Rating: **Tier II, Approaching quality**

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

STRONG	WEAK
1. Three-dimensional Learning (Non-Negotiable)	5. Learning Progressions
2. Phenomenon-Based Instruction (Non-Negotiable)	
3. Alignment Accuracy (Non-Negotiable)	
4. Disciplinary Literacy (Non-Negotiable)	
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 received a "Yes" for all Criteria 1-8.
Tier 2 ratings received a "Yes" for all non-negotiable criteria, but at least one "No" for the remaining criteria.
Tier 3 ratings received a "No" for at least one of the non-negotiable criteria.

Click below for complete grade-level reviews:

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

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: **Building Blocks of Science 3D** Grade/Course: **K**

Publisher: **Carolina Biological Supply Company** Copyright: **2019**

Overall Rating: **Tier II, Approaching quality**

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

STRONG	WEAK
1. Three-dimensional Learning (Non-Negotiable)	5. Learning Progressions
2. Phenomenon-Based Instruction (Non-Negotiable)	
3. Alignment Accuracy (Non-Negotiable)	
4. Disciplinary Literacy (Non-Negotiable)	
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	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, 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 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 (SEP), crosscutting concepts (CCC), and disciplinary core ideas (DCI) to support deeper learning. For example, in the Weather and Sky unit (pages 112-133), students engage in the SEP, "Planning and Carrying Out Investigations," to test the sun's effect (CCC) on Earth's surfaces (DCI LE.PS3B.a). In the "Push, Pull, and Go" unit (pages 37-38), instructional materials prompt the teacher to encourage students to think about and discuss forces that can make a ball move. Students engage in the SEP, "Planning and Carrying Out Investigations," by rolling a ball across the floor. Students make observations to identify patterns (CCC) in motion such as more force or a harder push equals greater speed (DCI LE.PS3C.a). In the "Living Things and Their Needs" unit, Lesson 1, the three dimensions are	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			integrated across a series of investigations to support deeper learning. In "Investigation A" (page 34), students build understanding of what plants and animals need to survive (DCI LE.LS1C.a) through the CCC of Patterns. Students look for and discuss patterns in characteristics of living and nonliving things through examination of a series of photo cards guided by questions including, "What do all living things do?" and "What do all living things need to live?" In "Investigation B" (page 35), students plant a pumpkin seed and begin a plant journal in which they will record observations as it develops into a plant. The teacher asks students if seeds are living things and challenges them to provide evidence for how they know (SEP "Engaging in Argument from Evidence"). Learners further engage with this SEP through a sensemaking discussion that encourages students to make a claim about plant growth and to support their claim with evidence and reasoning ("Teaching Tip," page 36).	
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**	Although improvement is needed, a majority of the time, observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning. For each unit, the instructional materials identify a descriptive narrative and short online video as the anchor phenomenon. While these videos and descriptive narratives offer exposure to	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			scientific content, they do not serve as anchoring phenomena that are puzzling, complex experiences driving the learning that follows. While phenomenon-based learning is not evidenced at an anchoring level, at an investigative level, phenomena serve to provide the purpose and opportunity for learning across the majority of lessons. Each lesson begins with a paragraph for the teacher to read aloud to students. Although lacking in variety of format, a majority of the presented investigative phenomena adequately provides an opportunity for learning. For example, in the “Push, Pull, Go” unit, Lesson 1, the teacher opens with a quick story about friends playing catch with a ball. One friend misses the ball and both observe the ball continue rolling, increasing in speed as it rolls down a hill (page 32). Students consider what this makes them wonder. Anticipated questions include, “Why did the ball keep rolling? Why did the ball roll fast? Why did the ball stop?” Students build understanding to construct explanation for their questions about the ball’s motion through the series of investigations that follow. This is accomplished as students roll a ball down a ramp to identify patterns in motion such as a push sets the ball in motion, hitting a shoe makes it stop or change direction,	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			and increasing the height of the ramp makes the ball roll farther and faster. Students identify a faster moving ball as having more energy. As another example, in the “Weather and Sky” unit, Lesson 3, students are presented with a scenario in which students on a playground suddenly see dark clouds roll in, feel the wind increase, and hear thunder. The teacher in the scenario calls the students inside. This sets the stage for students to wonder, “Why did we have to leave the playground and go in? Why did I hear thunder? Is thunder dangerous?” (page 86). Students build understanding through a hands-on investigation to determine what happens when it rains too hard and too fast for the ground to absorb the water, the dangers of flooding, and how to stay safe during flooding (pages 92-93).	
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**	A majority, 8 out of 10 or 80%, of "Louisiana Student Standards" for grade K Science are incorporated to the full depth of the standard. The two standards not covered to their full depth are K-ESS2-2 and K-ESS3-1 LSS K-ESS2-2 is not addressed to the full depth of the standard. This standard requires that students construct an argument supported by evidence for how plants and animals (including humans) can	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			change the environment to meet their needs. The "Lessons Overview" (page xxvii) references this standard in Lesson 3 of the "Living Things and Their Needs" unit. In Lesson 3, students successfully make observations to provide evidence to support the argument (SEP) that living things change their environment (DCI). However, no mention of systems and system models is made within the unit; therefore, the crosscutting concept is not addressed. LSS K-ESS3-1 is not addressed to the full depth of the standard. This standard requires that students use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live. While the "Lessons Overview" (page xxvii) references this standard in Lesson 3 of the "Living Things and Their Needs" unit, the primary focus is how living things change their environment. Little is mentioned of how the environment provides resources for living things which is a requirement of the DCI. Additionally, students do not make models to represent the relationship between needs (SEP) and the systemic link between living things and resources is not made (CCC). No other mention of system and system models is made in this unit.	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			Examples of standards covered in full depth include the "Weather and Sky" unit, Lesson 1 (page 1) which addresses K-ESS2-1. Students develop a chart to share their ideas about weather and begin building an age-appropriate understanding of Earth's place in the universe (DCI). Students predict weather conditions and objects that can be observed in the daytime sky and then go outside to record their observations (SEP). Students identify and sort daytime and nighttime weather conditions and objects in the sky to discuss patterns among them. (CCC). In the "Living Things and Their Needs" unit, Lesson 4 (page 83), LSS K-ESS3-3 is addressed. Students review the needs of living things and how living things change the environment and monitor and collect data about pumpkin plants to draw conclusions about their growth. In "Investigation B" students observe a bean plant to collect evidence of the similarities and differences between plant parents and plant offspring (DCI). In "Investigation D" students design solutions to reduce human impact on the local environment (CCC). Students discuss ways that humans impact their local environment in "Investigation C" (SEP).	
	REQUIRED **3b)** Science content is **accurate**, reflecting the most current and widely accepted explanations.	**Yes**	All reviewed content was accurate, up-to-date and aligned with the most current and widely accepted explanations. No	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			evidence could be found of incorrect or out-of-date science 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 course or grade-band. 83% or 10 of 12 standards addressed focus on Louisiana Student Standards for grade K. Two of the standards that do not fall within the Louisiana standards are K-2 ETS 1-1 and K-2 ETS 1-2. The “Engineering and Technology” standards are included in the program; however, they enhance teaching and learning and do not distract from the overall learning target.	
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. Materials address the necessity of using scientific evidence to support scientific ideas. For example, in the “Living Things and Their Needs” unit (page 32) students make a plant journal and use multiple copies of this sheet to record their observations of their germinating seeds.	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			In the “Weather and Sky” unit (page 113), students first discuss with a partner how to investigate the effects the sun has on soil, sand, gravel, and water. Then students work together to design a solution to block the sun from heating a surface, the sand at the beach, so that they can stay at the beach longer. Students record and provide a written explanation of how their design works on “Student Investigation, Sheet 5B.” After testing their design, students share challenges and results with other class members (page 130). In the “Push, Pull, Go” unit (page 94), students work together to invent a system in which a ball is used to knock down a series of dominoes. Students discuss and plan their invention together, then conduct tests to gauge its effectiveness, making design adjustments as needed. Students increase the challenge by adding a ramp to their invention to make the ball roll faster. Students provide written description of their invention on “Student Investigation Sheet 5A.” Finally, students share their inventions with each other, discussing the challenges they faced and modifications they used to overcome those challenges.	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
	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 produce solutions to problems, models of phenomena, explanations of theory development, and conclusions from investigations. In the “Push, Pull, Go” unit (page 76), students build a toy top to model movement and support the idea that the force applied to an object affects its speed and the direction in which it moves. In the “Living Things and Their Needs” unit (page 39), students observe, discuss and use explanations to identify patterns they notice between the “bessbug” and other insects they have seen. In the “Weather and Sky” unit (page 95), students use a tornado model to demonstrate the speed of the winds in a tornado.	
	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.	**Yes**	Materials provide a coherent sequence of authentic science sources that build scientific vocabulary and knowledge over the course of study. For example, in the “Weather and Sky” unit (page 91), students are introduced to the term “hazard” as they begin a study on dangerous weather. Students discuss examples of dangerous weather and problems it causes humans, then students	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			investigate floods and tornadoes and design a safety poster. These activities help students gain an understanding of "hazards" over the course of study. In the "Living Things and Their Needs" unit (page 35), students are introduced to the term "habitat" as they describe the habitat of a bessbug. In the "Push, Pull, Go" unit (page 65), the vocabulary words listed are "force," "gravity," and "motion." The teacher introduces the vocabulary words when she gives the background information on "Dominoes in Motion." Additionally, strategies for vocabulary development are provided in each unit. For example, students can use the "Word Wall" strategy to post and label the equipment they will be using during a unit. Students can also use the "Say-Then-Write" strategy which enables them to use the academic vocabulary of science in both oral and written forms. A specific reference can be found in the "Living Things and Their Needs" unit (page xiv).	
SECTION II: ADDITIONAL INDICATORS OF QUALITY				
Additional Criterion **5. LEARNING PROGRESSIONS:** The materials adequately address Appendix A: Learning Progressions. They are coherent and provide	**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**	**No**	The progression of learning is not coordinated and organized over time in a manner that supports student mastery of the performance expectations. The instructional units fail to include enough	BBS 3D is designed as a complete science curriculum for the entire school year. It is important to note that each lesson consists of multiple hands-on

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
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	**learning** is coordinated over time, clear and organized to prevent student misunderstanding and supports student mastery of the performance expectations.		material for engaging students in robust three-dimensional science instruction over the progression of a full school year; therefore, students do not have an adequate amount of learning opportunities to fully engage with the grade level standards to build the understanding and proficiencies required to master the associated performance expectations. See indicator 7c.	investigations and those investigations may take more than one day to complete. Submitted is a detailed pacing guide that better reflects the time required to teach BBS 3D. Please note that the Summary page on the document lists the total available instructional days. Feedback from teachers in Louisiana as well as across the nation confirms the instructional days are accurate. This pacing guide takes into account the resources that are found both in the Teacher's Guide and the online component. The pacing guide incorporates Questioning Strategies, Literacy Expository Text, Vocabulary Strategies, Connection of Driving Questions to the Lesson, Cross Curricular Instruction, and Real World Application. In addition, the pacing guide does not consider testing days or interruptions to regularly scheduled instruction time that may occur during the school year. This program is in classes throughout the US and teachers have found this to be a robust program with no need to supplement.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
				By implementing the pacing guide and related strategies, students will have opportunities for reinforcement, remediation and application of the standards.
	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 applicable grade's expectations in the "Louisiana Student Standards for Mathematics." In the "Push, Pull, Go" unit (page 42), students use "Unifix Cubes" to build a ramp, count, sort and measure which relates to Louisiana math standards K.CC.A.3, K.CC.B.5, K.CC.C.6, K.MD.A.1, K.MD.A.2, and K.MD.B.3 In the "Living Things and Their Needs" unit, Lesson 2 (page 58), students use paper clips to measure the height of pumpkin plants and enter the information on a "Plant Data Sheet," which relates to Louisiana math standard K.MD.A.2.	
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 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. Each unit has a teacher's guide complete with instructions on how to navigate the	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
☒ Yes ☐ No			guide. There are additional features included such as lesson overview charts, guides to instructional scaffolding, teacher preparation, background information, “NGSS Standards” by lesson, “Literacy and Digital Components,” and summative assessment. For an example of a teacher’s guide see the unit on “Exploring Organisms” (page i). In the “Living Things and Their Needs” unit (page 33), teachers are provided with background knowledge on the “bessbugs” that students will be handling and studying in class. In the “Weather and Sky” unit, “Teacher Tips” help teachers address the three-dimensions. For example, one “Teacher Tip” (page 40), suggests that teachers encourage students to give reasoning for their placement of sticky notes on a chart in order to introduce the scientific practice of making claims and providing evidence. Another “Teacher Tip” (page 112) suggests that teachers chart the daily morning and afternoon temperatures in their area for a period of time in order to identify temperature patterns (CCC) in their local area. Student exemplars are provided for all class discussions and activities to guide teachers in targeting speaking and writing. For example, in the “Push, Pull, and Go”	

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			unit (page 54), the student exemplar, "Students should explain that more force made the swing move faster," is provided in response to the teacher question, "How did you make the swing move faster?" Another exemplar (page 80), "With more force, the top spins faster and for a longer time before stopping," is provided in response to the teacher question, "What happens if we use more force to launch the top?"	
	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 supporting varying student needs at the unit and lesson level. For example, "Differentiation Strategies" are called out and described (page xiv-xv) of each unit. Suggested strategies include, "Tiered Instruction," "Technology," "Task Stations," "Sense Learning," and "Think-Pair-Share." Strategy descriptors suggest multiple ways teachers can plan for differentiation. For example, the descriptor for "Think-Pair-Share" suggests that teachers allow time for students to think and write about difficult topics. Then pair students by skill level and allow them time to discuss their ideas with another student before sharing in a whole class discussion. For example, in the "Push, Pull, Go" unit (page 32) a differentiation strategy is called out in the margin of the teacher's	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			guide suggesting that teachers help students struggling with new vocabulary terms “motion” and “force” by creating a working definition that relates a movement to the word. In the “Weather and Sky” unit (page 35) a differentiation strategy is called out in the margin of the teacher’s guide suggesting use of a “KLEWS” chart to help students formulate claims and evidence for their ideas throughout the unit. A brief description of a “KLEWS” chart is included along with a reference of where teachers can go to find out more about it. In the “Living Things and Their Needs” unit (page 37) a differentiation strategy states, “To provide support for the idea that living things can be grouped, encourage students to categorize objects in the classroom. Direct students to identify characteristics, such as color, size, or material, that can be used to group objects.”	
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. The materials, including the teacher’s manual are accessible online and downloadable as PDF’s. The material laboratory kits can be purchased from the company. In the “Living Things and Their Needs” unit (page xxxi) the kit materials are outlined in a chart showing quantities supplied and	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			what lessons the item are used in. If students go to the "New BBS 3D Platform" they can access online resources on the "Push, Pull, Go" unit such as a simulation to "Count, Sort, and Build" or one to simulate the lesson on dominoes tumbling. For example, in the "Weather and Sky" unit (page 117) the "Literacy Article 4C, Hello Sun," is provided to help students gain an understanding of how the sun's heat affects Earth's surface. In the "Push, Pull, and Go" unit (page 72) "Literacy Article 3A, Falling Tree," helps students understand how weather affects objects on Earth. In the "Living Things and Their Needs" unit (page 81) "Literacy Article 3B, A Call for Help," is provided to help students understand how living things depend on their environment. Laboratory sheets are also available in each unit. For example, in the "Weather and Sky" unit (page 72) "Student Investigation, Sheet 2B" is provided for students to model precipitation. In the "Push, Pull, and Go" unit (page 73) "Student Investigation, Sheet 3B" is provided for students to illustrate what happens to a line of dominos when a force is applied to one domino in the row. In the "Living Things and Their Needs" unit (page 96) a "Plant Data Sheet" is provided for students to record observations about their pumpkin plant.	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
	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. Safety guidelines are embedded in the curriculum. For example, each unit includes strategies for establishing safety procedures in the classroom or science lab (page xvii). A safety contract is also included (page xviii). In the “Weather and Sky” unit, the teacher’s guide (page xvii) addresses safety. “Safety Data Sheets” are available through the company website and are designated in the materials list when required for use in a lesson. A “Safety Rules for the Science” lab chart is available for discussion and display in the classroom and there is a safety contract for students to sign. In the “Living Things and Their Needs” unit (page xvii), a list of laboratory safety rules is included- such as tie back your hair, tuck in loose clothes, and listen for instructions before beginning an experiment. Additional safety procedures are called out as needed within lessons. For example, in the “Weather and Sky” unit (page 36) a safety tip is called out advising teachers to remind students not to look directly at the sun because it can damage their eyesight. In the “Living Things and Their Needs” unit	

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			(page 45) a safety tip is called out on the “Take Home Science Activity Sheet, The Seeds We Eat” suggesting that teachers remind students that they should ask an adult before eating any seeds as some are safe to eat while others are not.	
	7c) The total amount of content is **viable** for a school year.	**No**	The total amount of content is not viable for the school year. The instructional materials contain 3 units. The “Push, Pull, Go” and “Weather and Sky” units contain 5 lessons each and the “Living Things and Their Needs” unit includes 4 lessons. The content provided through these 14 lessons is inadequate to provide robust science instruction that involves students in doing science for the full length of the school year. The “180-Day Instructional Pacing Guide” provides guidance on pacing of content by indicating what should be taught each day. To expand the 14 lessons across the school year, the pacing guide devotes approximately half of the total daily science experiences to the extension activities, digital simulations, “Tell Me More” responses, and literacy articles. For example, in the “Push, Pull, Go” unit, Lesson 2, “Push, Pull, Swing,” the “Swing Set” digital simulation allows students to observe the motion of the swing by pressing “pull” or “push.” In Lesson 3, “Tell Me More” (page 68), students respond to the following prompt, “Make a prediction about the movement of the dominoes If	BBS 3D is designed as a complete science curriculum for the entire school year. It is important to note that each lesson consists of multiple hands-on investigations and those investigations may take more than one day to complete. Submitted is a detailed pacing guide that better reflects the time required to teach BBS 3D. Please note that the Summary page on the document lists the total available instructional days. Feedback from teachers in Louisiana as well as across the nation confirms the instructional days are accurate. This pacing guide takes into account the resources that are found both in the Teacher's Guide and the online component. The pacing guide incorporates Questioning Strategies, Literacy Expository Text, Vocabulary Strategies, Connection of Driving Questions to the Lesson, Cross Curricular Instruction, and Real World Application.

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			we carefully lined up all the dominoes in this room and pushed the first one, then ____.” A full day’s science instruction is an excessive amount of time to allot for such components, which are supplemental in nature and designed to be used at the teacher's discretion. There is not enough material to provide an academic year of quality science instruction for students. This is a missed opportunity to provide additional student learning experiences that support mastery of the performance expectations of the grade level.	In addition, the pacing guide does not consider testing days or interruptions to regularly scheduled instruction time that may occur during the school year. This program is in classes throughout the US and teachers have found this to be a robust program with no need to supplement. By implementing the pacing guide and related strategies, students will have opportunities for reinforcement, remediation and application of the standards.
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. Summative assessments and answer keys are available at the end of each unit. Students can take the summative assessments online in “BBS-3D.” Summative assessment remediation strategies charts are also available. In the “Living Things and Their Needs” unit (page 51), the “Teacher Preparation” section tells teachers in “Investigation A” to make a copy of the “Assessment Observation Sheet” and during the investigations use the questions and prompts to formatively assess students as they work. “General Rubrics” are available	

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			in “Appendix A” which can be used to assess individual progress. Furthermore, each unit includes “Tell Me More” questions at the end of each lesson such as the “Weather and Sky” unit (page 58) in which students are asked to put the words “cool,” “warm,” “cold,” and “hot” in order from lowest temperature to highest temperature. These questions provide teachers with an opportunity to formatively assess student understanding of the concepts taught in the lesson. Additionally, student “Investigation Sheets” are embedded within each lesson such as “Student Investigation, Sheet 3.B” found in the “Push, Pull Go” unit (page 74) which formatively assessing students ability to explain how dominoes move after a push.	
	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. Each unit has a summative assessment that helps to evaluate student understanding of key unit concepts. The summative assessment at the end of the “Weather and Sky” unit is structured on the application of the three dimensions. For example, “Item 7” states, “You take a ball outside. You put it in the Sun. What happens?” This challenges students to demonstrate understanding of how sunlight warms Earth’s surface (LE.PS3B.A)	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			and apply the "Crosscutting Concept" of "Cause and Effect." The summative assessment at the end of the "Push, Pull, Go" unit is also structured around the three dimensions. For example, "Item 1" states, "A ball is rolling down a hill. You push the ball up the hill. What happened? A. The ball changed direction, B. The ball tumbled dominos, C. The ball stopped." To answer this question, students apply their understanding of how a push applied to a moving object affects (CCC) the direction it moves (LE.PS2A.b).	
	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. A general rubric is provided to assess students' performance throughout each unit. For example, the "Living Things and Their Needs" unit, "Appendix A" has a general rubric that measures exploration, vocabulary, concept building and the science notebook. A similar rubric is found in the "Push, Pull, Go" unit (page 152). "Assessment Observation Sheets" at the end of each lesson provide criteria for teachers to look for during student discussion and exploration activities. For example, in the "Weather and Sky" unit (page 90), the "Assessment Observation Sheet" includes criteria such as, "Can	

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			students directly describe the weather using direct observation? Do they accurately record weather observations?," which align with performance expectation K-ESS2-1. These criteria are specific, observable, and measurable and help teachers access student progress in mastering content. The instructional materials provide scoring guides for the summative assessments at the end of each unit. The "Push, Pull, Go" unit (page 109-111), provides an example of such. Each guide includes a chart that shows which performance expectation is addressed by each item of the summative assessment. Additionally, the chart also identifies which lesson should be revisited for remediation purposes for each summative assessment item.	
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**	Students have multiple opportunities throughout each unit to demonstrate application of the three dimensions. The three dimensions are most often integrated with one another to support a deeper learning of the performance expectations	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
	2. Phenomenon-Based Instruction	Yes	Although improvement is needed, a majority of the time, observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning. Investigative phenomenon at the lesson level are used to engage students and drive learning for the lesson. Investigative phenomena are related across the unit but could be improved by linking to a larger overarching anchor phenomena.	
	3. Alignment & Accuracy	Yes	80% (8 out of 10) of the "Louisiana Student Standards" for grade K are appropriately addressed by the instructional materials and minimal time is spent on content that is outside of the course.	
	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.	
II: Additional Indicators of Quality	5. Learning Progressions	No	The instructional materials do not provide a sufficient amount of instructional opportunities for engaging students in robust three-dimensional science instruction over the progression of a full school year.	Designed for flexibility, BBS 3D is a complete science curriculum providing instructional resources for a full school year. Grade K has 177 available instructional days.
	6. Scaffolding and Support	Yes	There are separate teacher support materials which build teacher knowledge and assist them in providing students with robust, varied learning opportunities to	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			deepen conceptual understanding and develop scientific thinking.	
	7. Usability	**Yes**	Text sets, laboratory, and other scientific materials are readily accessible both digitally and through vendor packaging. The laboratory kits are outlined in the unit overview and can be purchased from the company. Each unit includes strategies for establishing safety procedures in the classroom or science lab. However, additional materials and learning opportunities should be included to make the program viable for a school year.	
	8. Assessment	**Yes**	Multiple types of formative and summative assessments are embedded in the instructional units. The assessments include items and tasks designed to measure student mastery of learning targets across the three dimensions.	
FINAL DECISION FOR THIS MATERIAL: **<u>Tier II, Approaching quality</u>**				

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: **Building Blocks of Science 3D** Grade/Course: **1**

Publisher: **Carolina Biological Supply Company** Copyright: **2019**

Overall Rating: **Tier II, Approaching quality**

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

STRONG	WEAK
1. Three-dimensional Learning (Non-Negotiable)	5. Learning Progressions
2. Phenomenon-Based Instruction (Non-Negotiable)	
3. Alignment Accuracy (Non-Negotiable)	
4. Disciplinary Literacy (Non-Negotiable)	
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	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, 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 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 (SEP), crosscutting concepts (CCC), and disciplinary core ideas (DCI) to support deeper learning. In the “Sky Watchers” unit, Lesson 1, (pages 38-39), students investigate with a shadow stick to observe changes in their shadow and measure its length multiple times throughout a day. Students engage in “Analyzing and Interpreting Data” (SEP) as they examine and compare how their shadows changed with the time of day (“Student Investigation, Sheet 1B”). Students consider how patterns (CCC) in their shadow data relate to patterns of the motion of the sun (DCI LE.ESS1A.a). In the “Light and Sound Waves” unit, Lesson 3, students are engaged in “Planning and Carrying Out Investigations” (SEP) to provide evidence that vibrating materials can make sound and that sound can make materials vibrate (DCI LE.PS4A.a). In “Investigation A” (page 75)	

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			each pair of students is given a metal spoon and an unsharpened pencil and string. Students share their ideas about how they might use these materials to study vibrations. Students' ideas are recorded on a class chart. After investigating, the materials call for a student discussion (page 77) in which students discuss "Patterns" (CCC) in their observations of sound as it traveled through different materials. In the "Exploring Organisms" unit, Lesson 5, "Investigation C," students design a piece of equipment, a tool, or clothing that mimics an animal or plant structure (SEP, "Constructing Explanations and Designing Solutions"). The design must work to solve a human problem but mimic an animal or plant structure (CCC, "Structure and Function"). This design project requires students to apply new learnings from previous lessons related to several "Disciplinary Core Ideas" (LE.LS1A..a, LE.ETS1B.a, and LE.ETS1C.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**	Although improvement is needed, a majority of the time, observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning. For each unit, the instructional materials identify a descriptive narrative and short online video as the anchor phenomenon. While these videos and descriptive narratives offer exposure to	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			scientific content, they do not serve as anchoring phenomena that are puzzling, complex experiences driving the learning that follows. While phenomenon-based learning is not evidenced at an anchoring level, at an investigative level, phenomena serve to provide the purpose and opportunity for learning across the majority of lessons. Each lesson begins with a paragraph for the teacher to read aloud to students. Although lacking in variety of format, a majority of the presented investigative phenomena adequately provides an opportunity for learning. For example, in the “Sky Watchers” unit, Lesson 1, the teacher opens with a quick story about objects that can be seen in the sky. Some are objects are close and some are far. Some can be seen during the day, some at night and some can be seen both during the day and night (page 32). Students consider what this investigative phenomenon makes them wonder. Anticipated questions include, “How far up in the sky can planes fly?” and “Why can I see stars only at night?” This provides opportunity for students to build understanding to construct explanations for their questions about patterns in the daytime and nighttime skies throughout the series of investigations that follow.	

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			This is accomplished as students develop a chart to share their ideas about objects in the sky, investigate patterns in the Sun's position using shadow measurements taken over the course of a day, and compare patterns in the daytime and nighttime skies. As another example, in the "Light and Sound Waves" unit, Lesson 5, the teacher asks students to visualize themselves on the playground. The teacher continues asking students to notice that the swings, slide, and jungle gym are all different colors and that the Sun's bright light is bouncing off the slide. The teacher also asks students to visualize the shadows on the ground. This sets the stage for students to wonder about "how we see different colors" and "how [is] a shadow made?", providing the opportunity for students to investigate how different materials change the path of light. Students build understanding through designing and testing plans to bend light using mirrors and a flashlight (page 106).	
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**	A majority, 8 out of 9 or 89%, of Louisiana Student Standards for grade 1 Science are incorporated to the full depth of the standards. The only standard not covered to its full depth is 1-PS4-4. The DCI, using tools to communicate, is addressed multiple times during the unit such as when students use	

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☒ Yes ☐ No			string and cups to make string cups to communicate (page 71). The SEP, constructing design solutions is also addressed as students create a device to solve a problem of communication (pages 129 - 131). However, the CCC, system and system model, is never called out in the unit. Examples of standards covered in full depth include LSS 1-PS4-1 which is addressed in the “Light and Sound” unit (page 40). To investigate the DCI, students touch their throats as they hum to feel the vibration, watch a digital simulation of vibrations, and tap a cup of water with a pencil to demonstrate that the pencil tapping against the cup makes a sound which travels through water as a vibration. To address the CCC, cause and effect, students respond to the question, "What caused the water to move?" (page 40). To address the SEP, students plan and conduct an investigation to explore vibrations using a drum. Students record observations and draw conclusions on “Student Investigation, Sheet 2A,” "Can You See Vibrations?"(page 51). 1-ESS1-1 is addressed in the “Sky Watchers” unit (page 32). Students observe shadows to look for patterns in the shadow’s position, and they compare how the shadow looks with the position of the Sun throughout the day. Students	

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			begin building an age-appropriate understanding of Earth's place in the universe (DCI). Students observe, measure, and record the change in position of a shadow over the course of a day (SEP). They analyze shadow data to compare to patterns of the Sun's apparent movement across the sky (CCC). 1-LS3-1 is addressed in the "Exploring Organisms" unit (page 92). In "Investigation C," students observe a bean plant to collect evidence of the similarities and differences between plant parents and plant offspring (DCI). In "Investigation A," they use patterns to explain how traits are inherited, or passed, from parents to offspring (CCC). Students identify similarities and differences between animal offspring and their parents in "Investigation B" (SEP).	
	REQUIRED **3b)** Science content is **accurate**, reflecting the most current and widely accepted explanations.	**Yes**	All reviewed content was accurate and aligned with the most current and widely accepted explanations. No evidence could be found of incorrect or out of date science 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 course or grade-band. 82 % or 9 of 11 standards addressed focus on Louisiana Student Standards for grade 1. Two standards do not fall within the Louisiana standard are K-2 ETS 1-1, and K-2 ETS 1 - 2. The "Engineering and Technology" standards are included in the program;	

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			however, they enhance teaching and learning and do not distract from the overall learning target.	
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. Materials address the necessity of using scientific evidence to support scientific ideas. Guidance on the incorporation of “Science Notebooks” is provided on page xi of each unit. Science notebooks are recommended for providing students with a written format for asking scientific questions, making predictions, recording evidence from observations, and develop explanations from evidence. For example, in the “Sky Watchers” unit (page 107) students use their science notebooks to respond to the prompt, “A bicycle is a system. It is made of parts that work together. Draw or write how the Sun, Earth, and Moon work together as a system.”	

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			In the “Exploring Organisms” unit (page 41), students discuss with a partner the dependency a specific plant and animal have on their environment. The partners create a “Venn” diagram in their science notebook to compare and contrast the dependency of each. In a class discussion, each pair share their ideas with the class. In the “Light and Sound Waves” unit (pages 48-59), students engage in “Investigation C” to gain an understanding of how the thickness of the rubber bands and the force with which they are plucked affects pitch and volume. Students respond to nine pages of questions and requested drawings as they conduct their investigation. Students provide written responses to “Tell Me More” questions which can be used to assess how well they understand the concepts taught.	
	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 produce solutions to problems, models of phenomena, explanations of theory development, and conclusions from investigations. For example, in the “Sky Watchers” unit (page 127-128), students work in groups to create models to demonstrate the movement of the Sun, Earth, and Moon in a system. The demonstration supports the phenomena that the Sun, Earth, and Moon	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			move in predictable patterns such as those that cause day, night, and seasons. In “Light and Sound Waves” unit (pages 72-80), students use cups and string to draw conclusions that sound needs a material to travel through and that vibrations travel as waves to our ears. In the “Exploring Organisms” unit (pages 60-61), students use different materials to model how animals act in nature. For example, students use a ball of dough to represent the soft body of an animal. Students make observations to the damage inflicted to the soft body when they attack it with their hands. Students also place the dough inside a plastic egg to represent the way an animals exoskeleton protects it from predators. These activities model the phenomenon of how adaptations help animals survive in their environment.	
	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.	Yes	Materials provide a coherent sequence of authentic science sources that build scientific vocabulary and knowledge over the source of study. For example, in the “Sky Watchers” unit, when introducing a lesson on Earth’s rotation on its axis, the teacher introduces the term “rotate” by referencing the movement of hands around a clock. To deepen understanding, students physically act out clockwise and counterclockwise	

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			rotations. Finally, students apply the terminology using a model of the Earth to investigate how the rotation of Earth on its axis affects day and night (pages 67-68). In the “Light and Sound Waves” unit (page 40), students are introduced to new vocabulary “vibrate” or “vibration” as they hum and touch their throat. Students interact with a digital simulation of vibrations. Finally, students investigate vibrations visually and kinesthetically by tapping a cup of water with their pencils and watching the vibrations move through the water. In the “Exploring Organisms” unit (page 38) the teacher explains the focus will be on living things and introduces the term “organism,” and explains that organisms are living things. Additionally, strategies for vocabulary development such as “Word Wall” strategy where students can post and label the equipment they will be using during a unit and “Say-Then-Write” strategy which enables students to use the academic vocabulary of science in both oral and written forms are recommended in all the units. For a specific reference see “Light and Sound Waves” (page xiv).	
SECTION II: ADDITIONAL INDICATORS OF QUALITY				

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
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.	**No**	The progression of learning is not coordinated and organized over time in a manner that supports student mastery of the performance expectations. The instructional units fail to include enough material for engaging students in robust three-dimensional science instruction over the progression of a full school year; therefore, students do not have an adequate amount of learning opportunities to fully engage with the grade level standards to build the understanding and proficiencies required to master the associated performance expectations. See indicator 7c.	BBS 3D is designed as a complete science curriculum for the entire school year. It is important to note that each lesson consists of multiple hands-on investigations and those investigations may take more than one day to complete. Submitted is a detailed pacing guide that better reflects the time required to teach BBS 3D. Please note that the Summary page on the document lists the total available instructional days. Feedback from teachers in Louisiana as well as across the nation confirms the instructional days are accurate. This pacing guide takes into account the resources that are found both in the Teacher's Guide and the online component. The pacing guide incorporates Questioning Strategies, Literacy Expository Text, Vocabulary Strategies, Connection of Driving Questions to the Lesson, Cross Curricular Instruction, and Real World Application. In addition, the pacing guide does not consider testing days or interruptions to regularly scheduled instruction time that may occur during the school year. This program is in classes throughout the US and teachers have found this to be a

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				robust program with no need to supplement. By implementing the pacing guide and related strategies, students will have opportunities for reinforcement, remediation and application of the standards.
	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.	**No**	Students do not apply mathematical thinking when applicable. While some application of mathematical thinking is included such as that found in the extension activities of the "Exploring Organisms" unit (pages 65 and 103), the overall amount of mathematical application is minimal. One unit lacks clear evidence of any mathematical application. While Math Standards are called out in the "Exploring Organisms" unit, "Lesson Overview" (pages xxv - xxix), for Lessons 1, 2, 4, and 5, only the examples on pages 65 and 103 could be found. In the "Sky Watchers" unit (page 33), students use rulers, chalk, a shadow stick, and an investigation sheet to investigate patterns in the Sun's position using shadow measurements taken over the course of a day, which relates to Louisiana Math Standard 1.MD.A.1. In the "Light and Sound Wave" unit, Lesson Overview (pages xxv-xxx), even though Math Standards are identified for	Details of the BBS 3D math connections are provided in the submitted file BBS3D LA IMET 5b evidence_math. The following standards have multiple connections in Grade 1: o 1.G.A o 1.MD.A, 1.MD.B, 1 MD.C o 1.NBT.B, 1.NBT.C

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			Lessons 2, 3, 5, and 6, no clear evidence of mathematical application is found in these lessons.	
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 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. Each unit has a teacher's guide complete with instructions on how to navigate the guide. There are additional features included such as lesson overview charts, guides to instructional scaffolding, teacher preparation, background information, "NGSS Standards by Lesson, Literacy and Digital Components," and summative assessment. For an example of a teacher's guide see the "Exploring Organisms" unit, (page i). In the "Sky Watchers" unit (page 82), background information is provided to explain and diagram how Earth's orbital revolution around the sun together with the tilt of its axis affects seasons in the different hemispheres of Earth. Scripts are also included in each lesson to help guide discussions. Instructions and materials needed to conduct investigations	

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			are included in each lesson. In "Light and Sound Waves" unit (page 35), teachers are given a materials list, then told what to post, and what questions to ask, etc. In the "Exploring Organisms" unit (page 36), a "Teacher Tip" is included to help teachers address the misconception students may have that nonliving things are dead things. To address this misconception, it is suggested that teachers explain that nonliving things were never living. Later on page 38, misconceptions are called out in the teacher script as teachers are provided with questions such as, "Do animals live anywhere besides on land? Can you provide examples?" to address the misconception that all organisms are land dwelling animals. On page 119, misconceptions are called out in the teacher's script advising teachers to remind students to think about a plant's roots to dispel misconceptions about plant parts that are located underground.	
	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**	There are appropriate suggestions and materials provided for differentiated instruction supporting varying student needs at the unit and lesson level. For example, "Differentiation Strategies" are called out and described (page xiv-xv) of each unit. Suggested strategies include "Tiered Instruction," "Technology," "Task Stations," "Sense Learning," and "Think-Pair-Share." Strategy descriptors suggest	

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			multiple ways teachers can plan for differentiation. For example, the descriptor for "Task Stations" suggests that teachers identify tasks or questions related to the content, then develop stations around the classroom to address students individual needs, such as review activities for struggling learnings and challenges for high-level learners. Differentiation strategies are routinely called out at the lesson level. In the "Exploring Organisms" unit (page 43-44) two differentiation strategies are shown in boxes. One states, "It may be helpful to review anatomical structures with students. Ask them to create a chart in their science notebooks with at drawing and description of each anatomical structure you choose to review." Another strategy is shown suggesting, "If students appear to struggle, provide time for them to compare answers with a partner." In the "Sky Watchers" unit (page 108) a differentiation strategy is called out in the margin of the teacher's manual suggesting that teachers create a mnemonic device to help students remember how the reflected light of the moon proceeds during the Moon's phase changes. Specific examples are provided. In the "Light and Sound Waves" unit (page 77) a differentiation strategy is called out	

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			in the margin of the teacher's manual suggesting that teachers encourage students to come up with other variables they can test when investigating how sound travels to our ears. Ideas such as changing the length of the string are offered.	
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. The materials, including the teacher's manual are accessible online and downloadable as PDF's. For example, if students go to the "New BBS 3D Platform" they can access online resources such as the digital simulation of Earth's rotation found in the "Sky Watchers" unit which allows them to observe Earth's rotation on its axis. A "Kit Materials" list is outlined in the "Sky Watchers" unit (page xxx) which lists instructional materials available in vendor packaging. Some included in this unit are Basalt rock samples, small and large spheres, wheels, chalk, rulers, and Sunrise and Sunset Card Set. There are also eText sets included for below-level, on-level readers, and Spanish readers. For example, in the "Light and Sound" unit, the below-level and on-level eReader, "Light and Sound Waves," is available with the Spanish eReader, "Ondaz de luz y sonido."	

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	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. In the “Exploring Organism” unit (as well as the other units) the teacher’s guide (page xvii) addresses safety. “Safety Data Sheets” are available through the company website and are designated in the materials list when required for use in a lesson. A “Safety Rules for the Science” lab chart is available for discussion and display in the classroom, and there is a safety contract for students to sign. In “Sky Watchers” unit (page 68) a safety tip alerts students not to look directly into a flashlight used in Lesson 2 Investigation B because it can damage their eyesight. In the “Light and Sound Waves” unit, “Teacher Tip” (page 75) it is suggested that teachers caution students to tap the desk lightly while their partners ear is on it.	

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	7c) The total amount of content is **viable** for a school year.	**No**	The total amount of content is not viable for the school year. The instructional materials contain 3 units. The "Exploring Organisms" and "Sky Watchers" units include 5 lessons each and the "Light and Sound Waves" unit includes 6 lessons. The content provided through these 16 lessons is inadequate to provide robust science instruction that involves students in doing science for the full length of the school year. The "180-Day Instructional Pacing Guide" provides guidance on pacing of content by indicating what should be taught each day. To expand the 16 lessons across the school year, the pacing guide devotes approximately half of the total daily science experiences to the extension activities, digital simulations, "Tell Me More" responses, and literacy articles. For example, in the "Light and Sound Waves" unit, Lesson 2, the "Sound Vibration Barrier" digital simulation allows students to press play to see how a barrier impacts sound waves. In Lesson 3, "Tell Me More" (page 79), students respond to the following prompt, "Give an example of a sound you have heard at school or at home. Describe what the sound traveled through to get to your ear." A full day's science instruction is an excessive amount of time to allot for such components, which are supplemental in nature and	BBS 3D is designed as a complete science curriculum for the entire school year. It is important to note that each lesson consists of multiple hands-on investigations and those investigations may take more than one day to complete. Submitted is a detailed pacing guide that better reflects the time required to teach BBS 3D. Please note that the Summary page on the document lists the total available instructional days. Feedback from teachers in Louisiana as well as across the nation confirms the instructional days are accurate. This pacing guide takes into account the resources that are found both in the Teacher's Guide and the online component. The pacing guide incorporates Questioning Strategies, Literacy Expository Text, Vocabulary Strategies, Connection of Driving Questions to the Lesson, Cross Curricular Instruction, and Real World Application. In addition, the pacing guide does not consider testing days or interruptions to regularly scheduled instruction time that may occur during the school year. This program is in classes throughout the US and teachers have found this to be a

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			designed to be used at the teacher's discretion. There is not enough material to provide an academic year of quality science instruction for students. This is a missed opportunity to provide additional student learning experiences that support mastery of the performance expectations of the grade level.	robust program with no need to supplement. By implementing the pacing guide and related strategies, students will have opportunities for reinforcement, remediation and application of the standards.
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. Summative assessments and answer keys are available at the end of each unit. Students can take the summative assessments online in BBS-3D. Summative assessment remediation strategies charts are also available. For example, each unit includes "Tell Me More" questions at the end of each lesson such as the one found in the "Light and Sound Waves" unit (page 77) in which students are asked to draw a picture showing how sound travels from the teacher's voice to students' ears. These questions provide teachers with an opportunity to formative assess student understanding of the concepts taught in the lesson.	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			Additionally, “Student Investigation Sheets” are embedded within each lesson such as Student Investigation Sheet 1.D found in the “Exploring Organisms” unit (page 48) which formatively assessing students ability to match plant and animal structures with their function. In “Exploring Organisms” (page 53) the “Teacher Preparation” section tells teachers in “Investigations A and B” to make a copy of the “Assessment Observation Sheet” and during the investigations use the questions and prompts to formatively assess students as they work. Summative assessments are provided at the end of each unit to assess students’ mastery of standards addressed within the unit and “General Rubrics” are available in “Appendix A” which can be used to assess individual progress. Students can also take the summative assessments online in “BBS-3D.” Summative assessment remediation strategies charts are also available (page 145).	
	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. Each unit has a summative assessment that helps to evaluate student understanding of key unit concepts. The summative assessment located at the end of the “Light and Sound Waves” unit has ten questions which included constructed	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			response, matching, and multiple choice. Item 5 asks students, “When do sound waves form? Circle all that apply. a. When an object moves back and forth on a table. b. When an object is sitting still on a table. c. When an object is hit by a hard object like a stick.” This item integrates the CC Cause and Effect and DCI LE.PS4A.a. In the “Light and Sound Waves” unit (page 96-97) Student Investigation Sheet 4.A integrates the 3 dimensions of 1-PS4-2. The sheet asks students to predict, observe, explain, and provide evidence for the necessity of light for objects to be seen, which involves students in “Engaging in Argument from Evidence and Constructing Explanations” (SEPs) Teachers can also utilize this “Investigation, Sheet 4A” to assess students’ understanding that the observed patterns (CCC, “Cause and Effect”) provide evidence for the idea that objects can be seen if light is available to illuminate them (DCI LE.PS4B.a). In the “Exploring Organisms” unit (page 64) students are asked to explain how a dog’s keen sense of smell helps it survive. This written response task is an opportunity for students to integrate the three dimensions as students “Construct Explanations” (SEP) about how the dog’s sense of smell functions (CCC, “Structure and Function”) to process information and survive (DCI LE.LS1D.a, LE.LS1A.a).	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
	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. A general rubric is provided to assess students' performance throughout each unit. For example, the "Exploring Organisms" unit, "Appendix A" has a general rubric (page 145) that measures exploration, vocabulary, concept building and the science notebook. "Assessment Observation Sheets" at the end of each lesson provide talking points for the teacher and observations to note during student exploration activities, quiet conversations, and class discussions. For example, in the "Exploring Organisms" unit (page 112), the "Assessment Observation Sheet" includes criteria such as, "Can students compare the appearance of young organisms and their parents? Do they notice patterns in their appearance?," which align with performance expectation 1-LS3-1. These criteria are specific, observable, and measurable and help teachers access student progress in mastering content. A teacher's version containing exemplar responses is provided to accompany each "Student Investigation" sheet. For example, a "Teacher Version of Student Investigation 5A.1" in the "Light and Sound	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			Waves" unit (page 121), which provides exemplars of student evidence used to support a claim as to whether various materials are transparent, translucent, or opaque. Exemplar responses such as, "the light did not pass through" or "the light bounced off" are specific, observable, and measurable. The instructional materials provide scoring guides for the Summative Assessments at the end of each unit. The "Sky Watchers" unit (pages 141-143) provides an example of such. Each guide includes a chart that shows which performance expectation is addressed by each item of the summative assessment. Additionally, the chart also identifies which lesson should be revisited for remediation purposes for each summative assessment item.	
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**	Students have multiple opportunities throughout each unit to demonstrate application of the three dimensions. The three dimensions are most often integrated with one another to support a deeper learning of the performance expectations	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
	2. Phenomenon-Based Instruction	**Yes**	Although improvement is needed, a majority of the time, observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning. Investigative phenomenon at the lesson level are used to engage students and drive learning for the lesson. Investigative phenomena are related across the unit but could be improved by linking to a larger overarching anchor phenomena.	
	3. Alignment & Accuracy	**Yes**	89% (8 out of 9) of the "Louisiana Student Standards" for grade 1 are appropriately addressed by the instructional materials and minimal time is spent on content that is outside of the course.	
	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.	
II: Additional Indicators of Quality	5. Learning Progressions	**No**	The instructional materials do not provide a sufficient amount of instructional opportunities for engaging students in robust three-dimensional science instruction over the progression of a full school year.	Designed for flexibility, BBS 3D is a complete science curriculum providing instructional resources for a full school year. Grade 1 has 180.5 available instructional days.
	6. Scaffolding and Support	**Yes**	There are separate teacher support materials which build teacher knowledge and assist them in providing students with robust, varied learning opportunities to	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			deepen conceptual understanding and develop scientific thinking.	
	7. Usability	**Yes**	Text sets, laboratory, and other scientific materials are readily accessible both digitally and through vendor packaging. The laboratory kits are outlined in the unit overview and can be purchased from the company. Each unit includes strategies for establishing safety procedures in the classroom or science lab. However, additional materials and learning opportunities should be included to make the program viable for a school year.	
	8. Assessment	**Yes**	Multiple types of formative and summative assessments are embedded in the instructional units. The assessments include items and tasks designed to measure student mastery of learning targets across the three dimensions.	
FINAL DECISION FOR THIS MATERIAL: **Tier II, Approaching 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: **Building Blocks of Science 3D** Grade/Course: **2**

Publisher: **Carolina Biological Supply Company** Copyright: **2019**

Overall Rating: **Tier II, Approaching quality**

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

STRONG	WEAK
1. Three-dimensional Learning (Non-Negotiable)	5. Learning Progressions
2. Phenomenon-Based Instruction (Non-Negotiable)	
3. Alignment Accuracy (Non-Negotiable)	
4. Disciplinary Literacy (Non-Negotiable)	
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	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, 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 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 (SEP), crosscutting concepts (CCC), and disciplinary core ideas (DCI) to support deeper learning. For example, in the “Matter” unit, Lesson 5 (pages 119-129), students build understanding of concepts related to DCI LE.PS1B.a. Students investigate physical changes as they warm a jar of coconut oil and observe melting, then place the jar in ice and observe the oil reharden (page 121). Students investigate chemical changes as they mix calcite and vinegar and observe the results (pages 124-125). Students engage with the CCC, “Cause and Effect,” as they investigate how changes in temperature cause changes in matter such as when an increase in temperature causes coconut oil to melt or eggs to cook. Students apply the SEP, “Engaging in Argument from Evidence,” as they justify whether changes in matter are physical or chemical in the scenario given on “Student Investigation. Sheet 5C” (page 140-145).	

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			In the "Ecosystem Diversity" unit, Lesson 3, students build a model (SEP, "Developing and Using Models") to apply understanding of how animals can pollinate plants or disperse seeds (DCI LE.LS2A.b). Students apply the CCC, "Patterns," as they identify commonalities between animals that transfer pollen and those that disperse seeds.	
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**	Although improvement is needed, a majority of the time, observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning. For each unit, the instructional materials identify a descriptive narrative and short online video as the anchor phenomenon. While these videos and descriptive narratives offer exposure to scientific content, they do not serve as anchoring phenomena that are puzzling, complex experiences driving the learning that follows. While phenomenon-based learning is not evidenced at an anchoring level, at an investigative level, phenomena serve to provide the purpose and opportunity for learning across the majority of lessons. Each lesson begins with a paragraph for the teacher to read aloud to students. Although lacking in variety of format, a majority of the presented investigative phenomena adequately provides	

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			opportunity for learning. For example, in the "Matter" unit, Lesson 2, the teacher opens with a quick story about three birds on a hot day who add ice cubes to their steaming bird bath to cool off, but the ice cubes disappear (page 52). Students consider what this investigative phenomenon makes them wonder. Anticipated questions include, "What happened to the ice cubes?" and "Why was there steam near the water?" Students build understanding to construct explanations for their questions about the water, steam, and ice cubes in the bird bath throughout the series of investigations that follow. This is accomplished as students make firsthand observations of water in its various states, contrast properties of different materials, and gather evidence to support the idea that matter is made of particles too small to be seen that change in their attraction and movement in various states. As another example, in the "Ecosystem Diversity" unit, Lesson 4, the teacher shares with students that zoos maintain buildings and outdoor terrestrial and aquatic exhibits that are maintained and monitored to ensure specific characteristics such as salt level and temperature. This sets the stage for students to wonder about why zoos design habitats in this way, providing the opportunity to explore characteristics of	

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			animals in relation to the diverse habitats that they prefer. Students build understanding through hands-on investigations of pill bugs (page 90) in which they determine characteristics of a habitat that best suit this organism.	
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**	All of the Louisiana Student Standards for Science in grade 2 are incorporated to the full depth of the standard. No evidence was found of a standard being insufficiently covered. LSS 2-LS2-1 is addressed in the "Ecosystem Diversity" unit (pages 41-42, 60). Students plan and carry out an investigation (SEP) to test whether or not plants need sunlight or water to grow (DCI). Students brainstorm ways that a habitat's climate affects the plants that live there (CCC). LSS 2-PS1-1 is addressed in the "Matter" unit (pages 72-80). Students plan and conduct investigations (SEP) to describe and classify different kinds of materials by their observable properties (DCI) in "Investigations A, B, and C." Students are asked, "Did you notice any patterns in how the substances mixed?" (CCC, page 80). LSS 2-ESS1-1 and 2-ESS2-1 are addressed in Lesson 3 (pages 100 -110) of the "Earth Materials" unit. Students use information from several sources "Earth Materials Literacy Reader," "Interactive Whiteboard	

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			Our Ideas About Soil," "Comparing Sand and Soil," and "Simulation Soil Erosion" to investigate how wind and water can slowly change and shape sand (DCI & CCC). Students further design a solution to slow down the erosion of sand by wind (SEP, DCI).	
	REQUIRED **3b)** Science content is **accurate**, reflecting the most current and widely accepted explanations.	**Yes**	All reviewed content was accurate, up-to-date and aligned with the most current and widely accepted explanations. No evidence could be found of incorrect or out-of-date science 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 course or grade-band. 79% or 11 of 14 standards addressed focus on Louisiana Student Standards for grade 2. Three of the standards that do not fall within the Louisiana standards are K-2 ETS 1-1, K-2 ETS 1-2, and K-2 ETS 1 -3. The "Engineering and Technology" standards are included in the program; however, they enhance teaching and learning and do not distract from the overall learning target.	
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	**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**		

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writing to develop scientific literacy. ☒ Yes ☐ No	**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. Materials address the necessity of using scientific evidence to support scientific ideas. In the "Earth Materials" unit (page 195-196), students create a model island with two landforms and one body of freshwater. After creating their model, students produce a written description of their model (page 196) and present their model to the class. Presentations include a description of the materials that make up Earth's surface and how at least one of their landforms could be affected by erosion (page 197). In "Ecosystem Diversity" unit (pages 41-43), students design and carry out an experiment to determine what plants need to grow well. They must share ideas, design an experiment to test which things plants need to grow well, perform the experiment, make observations, and document observations on Student Investigation Sheets. Students are also encouraged to make entries in their science notebook. In the unit "Matter" (pages 116-166), students engage in Investigation 5A to determine how well they understand the physical changes that occurred as coconut oil is heated and cooled. Students provide	

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			written responses to five pages of questions and illustrate their observations as they conduct their investigation. There are "Tell Me More" Questions that can be used to assess how well students understand the concepts taught.	
	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 produce solutions to problems, models of phenomena, explanations of theory development, and conclusions from investigations. In the "Matter" unit (pages 52-55), students use balloons to draw conclusions about gases and the behavior of their particles. In "Earth Materials" unit (pages 132-157), students are asked to analyze the components of soil obtained from the local area. In "Tell Me More!" students are asked to draw a picture of the types of living things they thought they might find if they dug a few inches down in the soil and connect to the investigative phenomenon. Later students model the phenomena of glacial erosion using an ice cube and sand (page 164).	

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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.	Yes	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 to deepen scientific learning. For example, in the "Matter" unit (page 78), students are introduced to new terminology "fluid" and "viscous" as they compare properties of different liquids. After observing the flow of oil and soap, students develop their own definitions for these terms. In the "Ecosystem Diversity" unit (page 58), students examine a diagram of a plant life cycle and reference their experience in sprouting radish seeds to generate a definition for "germination". This vocabulary understanding supports deeper understanding of DCI that plants are dependent on animals to spread their seeds around so they can germinate. In the "Earth Materials" unit (pages 42-44), during a teacher facilitated discussion of the water cycle the words precipitation, evaporation, and condensation are introduced to students. Additionally, strategies for vocabulary development such as the Word Wall Strategy where students can post and label the equipment they will be using during a	

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			unit and the "Say-Then-Write" strategy which enables students to use the academic vocabulary of science in both oral and written forms are recommended in all the units. For a specific reference see "Ecosystem Diversity" (page xiv).	
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.	**No**	The progression of learning is not coordinated and organized over time in a manner that supports student mastery of the performance expectations. The instructional units fail to include enough material for engaging students in robust three-dimensional science instruction over the progression of a full school year; therefore, students do not have an adequate amount of learning opportunities to fully engage with the grade level standards to build the understanding and proficiencies required to master the associated performance expectations. See indicator 7c.	BBS 3D is designed as a complete science curriculum for the entire school year. It is important to note that each lesson consists of multiple hands-on investigations and those investigations may take more than one day to complete. Submitted is a detailed pacing guide that better reflects the time required to teach BBS 3D. Please note that the Summary page on the document lists the total available instructional days. Feedback from teachers in Louisiana as well as across the nation confirms the instructional days are accurate. This pacing guide takes into account the resources that are found both in the Teacher's Guide and the online component. The pacing guide incorporates Questioning Strategies, Literacy Expository Text, Vocabulary Strategies, Connection of Driving Questions to the Lesson, Cross Curricular Instruction, and Real World Application.

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				In addition, the pacing guide does not consider testing days or interruptions to regularly scheduled instruction time that may occur during the school year. This program is in classes throughout the US and teachers have found this to be a robust program with no need to supplement. By implementing the pacing guide and related strategies, students will have opportunities for reinforcement, remediation and application of the standards.
	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 applicable grade's expectations in the "Louisiana Student Standards for Mathematics." In the "Earth Materials" unit (page 47), "Student Investigation, Sheet 1D.2, Can I Graph the Amount of Land and Water?" students assemble a graph which aligns with Louisiana Math Standard 2.MD.D.10 which is called out in the unit overview (page xxvi). In the "Ecosystem Diversity" unit (page 61), students add and subtract within twenty to solve equations to complete a color-by-number illustration of an animal	

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			in its habitat. The Louisiana Student Standard for Mathematics 2.OA.B.2 is called out in the unit overview (page xxvi). In the "Matter" unit (page 66), students classify matter as solids or liquids, then create a bar graph to show the quantity of each type of matter. The Louisiana Student Standard for Mathematics, 2.MD.D.10 is called out in the unit overview (page xxvi).	
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 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. For example, a "Background Knowledge" section is included at the beginning of each lesson in each unit of the teacher's manual. In the "Earth Materials" unit (page 135), background knowledge on soil is provided. Teachers can review different soil types and textures, how soil is affected by erosion, and how soil can be conserved in preparation for teaching the lesson. Scripts are included in each lesson to help guide discussions. Instructions and materials needed to conduct investigations are included in each lesson. In the "Earth Materials" unit (page 38), teachers are given a materials list which includes a science notebook, "Assessment	

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			Observation Sheet," chart paper, and markers. Teachers are provided with step-by-step directions telling what to post, "Our Ideas About the Things that Make Up Earth" and what to ask such as, "What things to you think compose the Earth?". Exemplars student responses are also provided throughout each lesson to guide classroom discussions. For example, in the "Ecosystem Biodiversity" unit (page 77), the exemplar student response, "Seeds attach to animals' fur and can be dispersed as they move around. Animals also eat seeds; when an animal eliminates waste, seeds are dispersed, and they may grow into plants in that location. Larger animals such as dogs, rabbits, and squirrels disperse seeds" is provided in response to the teacher discussion question, "How do animals help with seed dispersal? What kinds of animals do this?"	
	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 supporting varying student needs at the unit and lesson level. For example, "Differentiation Strategies" are called out and described (page xiv-xv) of each unit. Suggested strategies include "Tiered Instruction," "Technology," "Task Stations," "Sense Learning," and "Think-Pair-Share." Strategy descriptors suggest multiple ways teachers can plan for differentiation. For example, the	

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			descriptor for “Sense Learning” suggests that teachers incorporate videos, infographics, audio, charts, illustrations, spoken and written directions, physical objects, acting, and art into lessons. Suggestions for differentiation are also included at the lesson level. In the “Matter” unit (page 38) a differentiation strategy is included in the margin for students who struggle to distinguish between different materials. The strategy suggests that teachers set up a station activity using nails, wooden rulers, and toys and then explain that these materials are different because some are made from plastic while others are made from wood and iron. In the “Ecosystem Diversity” unit (page 38) a differentiation strategy is shown in a box in the margin which directs teachers to ask students who struggle to understand the basic needs of living things to think about how they might prepare to plant a garden or adopt a pet. Teachers may further ask, “Ask what things they would need to make sure the living thing can live and grow.” In the “Earth Materials” unit (page 38) a differentiation strategy is included in the margin suggesting that teacher’s use a “KLEWS” chart throughout the unit to help students formulate claims and evidence.	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			For example, in a discussion about the things that make up the Earth, it is suggested that students write their “Knows” and “Wonders” on sticky notes and stick them under the K and W on the chart to refer to throughout the unit (page 38).	
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**	Student text, laboratory sheets, and other scientific materials are readily available through vendor packaging. Students may access student readers and interactive readers online through the vendor portal. Student laboratory sheets, investigation sheets, and literacy articles are available in PDF format and online through the vendor portal. Scientific materials that are needed for experiments are listed and most are included in vendor packaging according to the supply lists included within the teacher’s manual. In the “Ecosystem Diversity” unit (page xxx-xxxi), the kit materials are outlined in a chart showing quantities supplied and what lessons the item would be used in. For example, the kit lists such items as choice chamber, dried bee, habitat card set, and literacy reader. If students go to “New BBS 3D” Platform they can access online resources on the unit “Matter” and use a simulation “Identity Change to understand physical changes by observing the effects of temperature.	

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			Student Readers are provided for each unit. For example, in the "Ecosystem Diversity" unit, a below grade level, "Ecosystem Diversity," and on grade level reader, "Exploring Organisms," is provided. An explanation of how to use leveled readers is found on page xiii. Literacy articles are found in each unit. For example, in the "Earth Materials" unit, "Literacy and Science Article 2A, My Time Machine" is found on page 78 and "Literacy Article 3A, Breaking Down Earth's Materials" is found on page 113. Student "Investigation Sheets" are provided in each unit. For example, in the "Matter" unit "Student Investigation Sheet 3A, "Which Materials Will Mix?" is included to guide students in predicting, observing, recording, and comparing solid mixtures to solid and liquid mixtures (pages 84-86). "Student Investigation Sheet 4A, "How Can Physical Properties be Used to Identify Materials?" guides students to examine the physical properties of different solids, including whether or not they sink or float (pages 101-105).	
	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.	

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			In “Ecosystem Diversity” (as well as the other units) in the teacher’s guide, page xvii, safety is addressed. Safety Data Sheets are available through the company website and are designated in the materials list when required for use in a lesson. A “Safety Rules for the Science” lab chart is available for discussion and display in the classroom, and there is a safety contract for students to sign. Additional safety procedures are called out as needed within lessons. For example, in the “Matter” unit (page 57), a safety tip is called out advising teachers to follow manufacturer’s instructions when operating a hot plate or kettle and to avoid contact with steam. In the Earth Materials unit (page 105), students are instructed to wear safety goggles while investigating the effect wind has on sand. The Teacher Tip suggests that the teacher also wear goggles to demonstrate the importance of following proper safety procedures.	
	7c) The total amount of content is **viable** for a school year.	**No**	The total amount of content is not viable for the school year. The instructional materials contain 3 units. The Matter and “Ecosystem Diversity” units include 5 lessons each and the Earth Materials unit includes 6 lessons. The content provided through these 16 lessons is inadequate to provide robust science instruction that	BBS 3D is designed as a complete science curriculum for the entire school year. It is important to note that each lesson consists of multiple hands-on investigations and those investigations may take more than one day to complete. Submitted is a detailed pacing guide that better reflects the time required to teach

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			involves students in doing science for the full length of the school year. The "180-Day Instructional Pacing Guide" provides guidance on pacing of content by indicating what should be taught each day. To expand the 16 lessons across the school year, the pacing guide devotes approximately half of the total daily science experiences to the extension activities, digital simulations, "Tell Me More" responses, and literacy articles. For example, in the "Matter" unit, Lesson 2, the "Water Conservation" digital simulation allows students to press play to see 3 different containers fill in comparison with a beaker. In Lesson 3, "Tell Me More" (page 80), students respond to the following prompt, "Brass, which is used to make instruments like trumpets, is made by mixing two metals copper and zinc. What must happen before these metals can be mixed?" A full day's science instruction is an excessive amount of time to allot for such components, which are supplemental in nature and designed to be used at the teacher's discretion. There is not enough material to provide an academic year of quality science instruction for students. This is a missed opportunity to provide additional student learning experiences that support mastery	BBS 3D. Please note that the Summary page on the document lists the total available instructional days. Feedback from teachers in Louisiana as well as across the nation confirms the instructional days are accurate. This pacing guide takes into account the resources that are found both in the Teacher's Guide and the online component. The pacing guide incorporates Questioning Strategies, Literacy Expository Text, Vocabulary Strategies, Connection of Driving Questions to the Lesson, Cross Curricular Instruction, and Real World Application. In addition, the pacing guide does not consider testing days or interruptions to regularly scheduled instruction time that may occur during the school year. This program is in classes throughout the US and teachers have found this to be a robust program with no need to supplement. By implementing the pacing guide and related strategies, students will have opportunities for reinforcement, remediation and application of the standards.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			of the performance expectations of the grade level.	
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. Summative assessments and answer keys are available at the end of each unit, students can also take the summative assessments on-line in BBS-3D. Summative assessment remediation strategies chart are also available. In the “Earth Materials” unit (page 140), the “Tell Me More” is a formative assessment which has a place for teacher notes. Assessment strategies are listed on page 144 and refer to available “Assessment Observation Sheets” and “General Rubrics” available in “Appendix A” which can be used to assess individual progress. In the “Matter” unit an “Assessment Observation Sheet” is found at the end of each lesson such as at the end of Lesson 2 (page 80) which provides the teacher with student “look-fors” when formatively assessing student discussions on the properties of different phases of matter. A “Student Investigation Sheet” follows each lesson such as at the end of Lesson 4 (page 101-104) which allows teachers to	

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			formatively assess students' ability to explain the properties of different substances. A summative assessment tool follows each unit such as at the end of the "Matter" unit (page 149).	
	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, a summative assessment is provided at the conclusion of the "Ecosystem Diversity" unit (page 123-127) which addresses the three-dimensions. Question 2, "Which characteristic is common for animals that live in the dessert?" measures student understanding of "Patterns" (CCC) in the diversity of the many kinds of living things in any area (DCI LE.LS4D.a). Question 5 addresses students' ability to apply understanding of DCI LE.LS2A.b and "Cause and Effect" (CCC) relationships to predict the result of a hummingbird drinking nectar from pink flowers more often than white. Question 9 asks students to examine an experimental procedure to determine a problem in the design and explain how the problem could be solved. This question focuses on the SEP, "Planning and Conducting Investigations." Additional assessment tools are provided by way of Student Investigation Sheets. For example, in the "Earth Materials" unit, Student Investigation Sheet 3D, students	

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			record their predictions and plan to slow down the effects (CCC) design a model that slows down the effects of the wind. Examination of a student's sheet will provide the teacher with insight into students' ability to "Design Solutions" (SEP) and understanding of the "Disciplinary Core Ideas" LE.ESS2A.a and LE.ETS1C.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. A general rubric is provided to assess students' performance throughout each unit. For example, the "Ecosystem Diversity" unit, "Appendix A," has a general rubric that measures exploration, vocabulary, concept building and the science notebook. Instructional materials also include more specific rubrics that give detailed, observable criteria in relation to a culminating project. For example, in the "Earth Materials" unit (page 212), "Teacher Sheet 6B" assists the teacher in evaluating each student's model island and presentation content and is aligned to performance expectations 2-ESS2-2 and 2-ESS2-1 in that it requires students to accurately represent the appropriate placement of landforms, describe the landforms and bodies of water	

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			represented, describe and explain the materials chosen, and describe how the landform could be affected by erosion. Assessment Observation Sheets at the end of each lesson provide talking points for the teacher and observations to note during student exploration activities, quiet conversations, and class discussions. For example, in the Ecosystem Diversity unit (page 86), the Assessment Observation Sheet includes criteria such as, “Do students’ models accurately demonstrate seed dispersal or pollination? Can students describe the characteristics of the animal that assists in either process?”, which align with Performance Expectation 2-LS2-2. These criteria are specific, observable, and measurable and help teachers access student progress in mastering content. The instructional materials provide scoring guides for the “Summative Assessments” at the end of each unit. The “Matter” unit (pages 161-164) provides an example of such. Each guide includes a chart that shows which performance expectation is addressed by each item of the summative assessment. Additionally, the chart also identifies which lesson should be revisited for remediation purposes for each summative assessment item.	

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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**	Students have multiple opportunities throughout each unit to demonstrate application of the three dimensions. The three dimensions are most often integrated with one another to support a deeper learning of the performance expectations	
	2. Phenomenon-Based Instruction	**Yes**	Although improvement is needed, a majority of the time, observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning. Investigative phenomenon at the lesson level are used to engage students and drive learning for the lesson. Investigative phenomena are related across the unit but could be improved by linking to a larger overarching anchor phenomena.	
	3. Alignment & Accuracy	**Yes**	100% (11 out of 11) of the "Louisiana Student Standards" for grade 2 are appropriately addressed by the instructional materials and minimal time is spent on content that is outside of the course.	
	4. Disciplinary Literacy	**Yes**	Students participate in a variety of tasks that help them develop a deeper understanding of science content.	

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			Students develop models, complete investigative tasks, and regularly speak and write as they draw conclusions and make claims supported by scientific evidence.	
II: Additional Indicators of Quality	5. Learning Progressions	**No**	The instructional materials do not provide a sufficient amount of instructional opportunities for engaging students in robust three-dimensional science instruction over the progression of a full school year.	Designed for flexibility, BBS 3D is a complete science curriculum providing instructional resources for a full school year. Grade 2 has 180.5 available instructional days.
	6. Scaffolding and Support	**Yes**	There are separate teacher support materials which build teacher knowledge and assist them in providing students with robust, varied learning opportunities to deepen conceptual understanding and develop scientific thinking.	
	7. Usability	**Yes**	Text sets, laboratory, and other scientific materials are readily accessible both digitally and through vendor packaging. The laboratory kits are outlined in the unit overview and can be purchased from the company. Each unit includes strategies for establishing safety procedures in the classroom or science lab. However, additional materials and learning opportunities should be included to make the program viable for a school year.	
	8. Assessment	**Yes**	Multiple types of formative and summative assessments are embedded in the instructional units. The assessments include items and tasks designed to measure student mastery of learning targets across the three dimensions.	

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FINAL DECISION FOR THIS MATERIAL: **Tier II, Approaching 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: **Building Blocks of Science 3D** Grade/Course: **3**

Publisher: **Carolina Biological Supply Company** Copyright: **2019**

Overall Rating: **Tier II, Approaching quality**

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

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

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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, 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 scientific content knowledge and 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 “Weather and Climate Patterns” unit, the CCC, “Patterns,” is addressed several times. For example, in Lesson 1, “Investigation C” (page 42), and across lessons throughout the entire module, students are asked to collect and record their own qualitative and quantitative observations of local weather and look for and discuss “Patterns” (CCC) that they notice in temperature, precipitation, and wind. Students analyze and discuss their local weather observations and examine how it compares to actual meteorological findings (SEP, “Analyzing and Interpreting Data”) In Lessons 3 and 4, the CCC, “Patterns,” is addressed as students analyze patterns in their local weather over the week. Students are then asked to analyze patterns within tables of information containing weather data from	

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			two cities. Looking at these tables, students should find patterns of temperature and wind with the given data. The DCI, UE.ESS2.D.a, is addressed throughout the unit, such as in Lesson 3, "Investigation C," when students are asked to make predictions about weather in various cities based on climate data. The "Life in Ecosystems" unit, Lesson 2, "Investigation A and B", involves students in collecting data about their own inherited traits and comparing their data with classmates to look for "Patterns" (CCC). Students then compile, interpret and graph that data (SEP, "Analyzing and Interpreting Data"). The integration of these dimensions supports students in building understanding that organisms have many inherited traits that can cause variation in the look and function of individuals (DCIs UE.LS3A.a and UE.LS3B.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**	Although improvement is needed, a majority of the time, observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning. For each unit, the instructional materials identify a descriptive narrative and short online video as the anchor phenomenon. While these videos and descriptive narratives offer exposure to scientific content, they do not serve as anchoring phenomena that are puzzling, complex experiences driving the learning that follows.	

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			While phenomenon-based learning is not evidenced at an anchoring level, at an investigative level, phenomena serve to provide the purpose and opportunity for learning across the majority of lessons. Each lesson begins with a paragraph for the teacher to read aloud to students. Although lacking in variety of format, a majority of the presented investigative phenomena adequately provides opportunity for learning. For example, in the "Life in Ecosystems" unit, Lesson 1 students engage with investigative phenomenon related to the diversity of living things in a park . The teacher describes a scene in the park and includes the sights and sounds that one might notice such as a frog croaking or a line of ants. Students are asked to generate questions about the scene. Anticipated questions include, "Why do so many different things live in this park? " and "Are there things besides plants and animals living in this park?" This sets the stage for learning that follows throughout the lesson as students engage in discussions about the plants and animals around us and compare the life cycles of various plants and animals. By observing the life cycle of a plant, students observe and interact with science concepts helping to build an understanding of the diversity of life that exists within ecosystems.	

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			In the "Forces and Motion" unit, Lesson 3, the investigative phenomenon is introduced to students as the teacher describes four friends getting on an amusement park ride. While getting on the ride, they notice height and weight requirements and that the car seems to slow down during a turn. Students are asked to generate questions about this situation and investigate throughout the lesson to discover connections between force and motion and the scenario. Students build this knowledge through investigations in Lesson 3 beginning with an exploration using a car and different types of weights attached to the car. This exploration of force continues as students engage with magnets and washers determining the relationship between force and mass by adding additional washers and magnets to the experiment.	
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**	All of Louisiana Student Standards for grade 3 are appropriately addressed by the instructional materials. These standards are addressed to the full depth of the standard and include various opportunities for student learning. The "Weather and Climate Patterns" unit appropriately addresses standard 3-ESS3-1. The SEP, engaging in argument from evidence, CCC of cause and effect, and DCI are appropriately addressed. Students begin researching natural hazards (DCI)	

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			within a group (page 176). After researching, students propose possible design solutions (DCI) and develop a claim about the effectiveness of the proposed solution (SEP). “Student Investigation, Sheet 5A” guides students through this process of researching and planning while asking students to identify ways that the proposed solution may affect (CCC) the environment. Finally, students present information to classmates related to the weather hazard and a possible solution while evaluating its effectiveness (PE). In the “Force and Motion” unit, Lesson 1, “Investigations A, B and C3-PS2-1,” students “plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object”. Students construct a balance beam and determine how various masses affect the balance beam, including the effect of gravity. Lesson 5, “Investigation B,” addresses standard 3-PS2-4. Students build a simple - design with magnetics using 4 different design challenges (pages 157-158).	
	REQUIRED **3b)** Science content is **accurate**, reflecting the most current and widely accepted explanations.	Yes	All reviewed content was accurate, up-to date and aligned with the most current and widely accepted explanations. No evidence could be found of incorrect or out of date science 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 course or grade-band. 88 % or 15 of 17 standards addressed focus on Louisiana Student	

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			Standards for grade 3. Two of the standards that do not fall within the Louisiana standards are 3-5 ETS 1-1 and 3-5 ETS 1 - 2. The “Engineering and Technology” standards are included in the program; however, they enhance teaching and learning and do not distract from the overall learning target.	
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 ideas and have opportunities to discuss scientific phenomenon. In the “Forces and Interactions” unit, Lesson 3, student are presented with the phenomenon of the roller coaster at the amusement park and the fact that the car seems to slow down at turns. Students begin the lesson by generating questions related to the phenomenon and discussing unbalanced forces. Students also discuss how the strength of a force can affect the motion of an object (page 46-47). Students update science notebooks with new information about forces (page 48) and	

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			use this new information to explain the phenomenon at the end of the lesson. In the “Life in Ecosystems” unit, Lesson 5, students make observations of plants and butterflies that have been growing and changing inside a classroom ecosystem model. Students record observations of the ecosystem in a science notebook (page 76). Students discuss why the “Wisconsin Fast Plants” and the “Painted Lady Butterflies” from the classroom observation cannot be released into the local ecosystem. Finally, students write ideas about how humans interact with the ecosystem and then discuss these ideas with a partner(page 78). In the “Weather and Climate Patterns” unit, students regularly engage in speaking and writing about the scientific phenomenon. In Lesson 2, Investigation B, students research climates in various cities in North America (pages 73-75). In Lessons 4 and 5, students research and present weather hazards and how to reduce the impact weather hazards (pages 151-152;175-179).	
	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, drawing conclusions, conducting tests ,and designing solutions to problems. In the “Force and Motion” unit, there is a variability in the tasks that students are	

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			required to investigate throughout out the unit. In Lesson 1, "Investigations, A, B, and C," students build a balance beam and investigate how mass and gravity affect balanced and unbalanced forces (pages 41-45). In Lesson 5, "Investigation B," students are using magnets to solve problems by building simple designs (page 157-158). The "Life in Ecosystems" unit, Lesson 4 gives students an opportunity to observe how environmental factors affect plant growth. Students observe plants that have been moved away from the light source and draw conclusions as to why the stems are not growing straight, but rather bent (page 65).	
	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.	**Yes**	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. In the "Force and Motion" unit, Lesson 1, students have multiple opportunity to use balance and unbalanced force, fulcrum, gram, level, gravity, and other vocabulary listed (page 33). This vocabulary is easily used within the investigations. In Lesson 3, students are given ample opportunity to use the vocabulary listed (page 87), through the various investigations.	

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			The “Life in Ecosystems” unit begins with a brainstorming session in which partners define the word “ecosystem”. The teacher lists words (forest, city, school, etc), and the partners classify these as ecosystems or not ecosystems. After breaking the word apart and asking that students focus on the “system” part of the word, the students discuss what things are part of an ecosystem, and the teacher clarifies by defining the term (page 6).	
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.	**No**	The progression of learning is not coordinated and organized over time in a manner that supports student mastery of the performance expectations. The instructional units fail to include enough material for engaging students in robust three-dimensional science instruction over the progression of a full school year; therefore, students do not have an adequate amount of learning opportunities to fully engage with the grade level standards to build the understanding and proficiencies required to master the associated performance expectations. See indicator 7c.	BBS 3D is designed as a complete science curriculum for the entire school year. It is important to note that each lesson consists of multiple hands-on investigations and those investigations may take more than one day to complete. Submitted is a detailed pacing guide that better reflects the time required to teach BBS 3D. Please note that the Summary page on the document lists the total available instructional days. Feedback from teachers in Louisiana as well as across the nation confirms the instructional days are accurate. This pacing guide takes into account the resources that are found both in the Teacher's Guide and the online component.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
				The pacing guide incorporates Questioning Strategies, Literacy Expository Text, Vocabulary Strategies, Connection of Driving Questions to the Lesson, Cross Curricular Instruction, and Real World Application. In addition, the pacing guide does not consider testing days or interruptions to regularly scheduled instruction time that may occur during the school year. This program is in classes throughout the US and teachers have found this to be a robust program with no need to supplement. By implementing the pacing guide and related strategies, students will have opportunities for reinforcement, remediation and application of the standards.
	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.	**No**	The materials present some opportunity for students to apply mathematical thinking. Math skills beyond the grade level's expectations in the Louisiana Student Standards for Mathematics are introduced. For example, in the "Weather and Climate Patterns" unit (page 71), "Student Investigation, Sheet 2A," students are called to find the average of a set of temperatures. This includes dividing the total, which is a concept introduced in third grade and developed further in 4th	Details of the BBS 3D math connections are provided in the submitted file BBS3D LA IMET 5b evidence_math. The following standards have connections in Grade 3: o 2.NBT.A.4, 2.MD.A o 3.NBT.A o 3.MD.A, 3.MD.A.1, 3.MD.A.2, 3.MD.B, 3.MD.B.4, 3.MD.B.3 o 3.NF.A.3 o 3.OA.A, 3.OA.A.4, 3.OA.B.6, 3.OA.D.8

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			grade (4.NBT.6). Students are also asked to estimate the average temperature.	
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 including teacher background knowledge, information on the 5E teaching framework, teacher preparation notes, and guidance to address student misconceptions. In the "Weather and Climate" unit, Lesson 4 (page 147), teachers are given an entire page of background information about the topic being taught. It furthers teachers' background knowledge on air masses, tropical storms, how meteorologist give warnings to regions about dangerous weather, and the importance of seeking shelter during these warnings. This can be found within each of the lessons. Each unit has a section for "Differentiation Strategies" and "Strategies for English Language Learners." There is also a section, "Evidence of Instructional Scaffolding," in which each lesson gives teachers a "guided process" that "systematically builds upon students' knowledge." Information regarding the 5E instructional model can be found on page Viii of each unit.	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			In the “Life in Ecosystems” unit, Lesson 4 (page 61-62), notes are included prior to the lesson to aide teachers in preparation. The preparation notes direct the teacher to create a chart, gather colored chips, make copies of needed investigation sheets and gather colored pencils. Notes included within the materials also address possible student misconceptions. On page 78, a note is given to dispel the common thought that bones are fossils and indicates that fossils are the traces of the remains of an organism.	
	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 are given to support diverse learners and ensure that all students master the content. A “Differentiation Strategies” section is included at the beginning of each unit (page xiv). Here teachers can find suggested strategies and resources for differentiation of instruction. A Scaffolding chart is additionally provided in each unit to help teachers gauge each student's achievement level (page xxii-xxiii). Finally, content specific strategies are called out in the margins of the “Teacher’s Manuals.” In the “Forces and Interaction” unit, page 40 offers teaching tips on the margins of the page for an alternative teaching approach. This also gives suggestions for common student difficulties to meet the standards. Page xxv offers a detailed pacing guide. Page 47 has extension	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			activities to extend the lesson and the instructional delivery options. In the “Life in Ecosystems” unit, page 73 offers teaching tips on the margins of the page for an alternative teaching approach. This also gives suggestions for common student difficulties to meet the standards. Page xxvi offers a detailed pacing guide. Page 79 has extension activities to extend the lesson and the instructional delivery option.	
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 materials, and other scientific materials are readily accessible through vendor packaging. The teacher’s edition is online and may be downloaded as a PDF file or used online. The units contain the information needed to teach the lesson including how to access the digital component of the curriculum and access to reading materials. The sheets needed to complete each unit are very easy to find within the teacher’s edition. The laboratory materials are listed out and provided through the vendor, along with how to set up each investigation and a time frame of how to do so. In the “Force and Interactions” unit (page xxi), a description is given about each of the digital components offered in the unit along with information to access the digital components. The five pages after the last page of Lesson 1 (page 48) are the students investigation sheets that	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			correlate with Lesson 1. Page xxx and xxxi list out all of the materials needed and the lessons that the materials should be used in a table. This is true for each of the units. The “Weather and Climate Patterns” unit includes a student reader that is also available in a Spanish version. The reader includes sections such as weather patterns, the water cycle, climate patterns, SEP, careers, and a glossary. On page 11 of the student reader, information is given about climate and its relationship to location on Earth and altitude along with a picture of a mountain and the valley below.	
	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**	The materials help students build an understanding of standard operating procedures in a science laboratory. Additionally, each unit provides a safety contract. Each investigation provides teachers with safety guidelines, procedures, and equipment. The “Force and Interactions” unit (page xviii) provides a safety contract for teachers and students to review before beginning the unit. General safety guidelines, such as tie long hair back and tuck in loose clothing, can be found on page XVii. Lesson 1 (page 33-34) provides a “Teacher Prep” that gives teachers safety guidelines, procedures, and equipment for the lesson.	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			The “Life in Ecosystem” unit (page xviii) provides a safety contract for teachers and students to review before beginning the unit. Lesson 2(page 69) provides a “Teacher Prep” that gives teachers safety guidelines, procedures, and equipment for the lesson. Specific safety procedures are also called out within lessons as needed. For example, in the “Forces and Interactions” unit (page 118), a safety note is given to remind students to keep the lid on the container of iron filings. A safety data sheet on iron filings can also be located online.	
	7c) The total amount of content is **viable** for a school year.	**No**	The total amount of content is not viable for the school year. The instructional materials contain 3 units with 5 lessons each. The content provided through these 15 lessons is inadequate to provide robust science instruction that involves students in doing science for the full length of the school year. The “180-Day Instructional Pacing Guide” provides guidance on pacing of content by indicating what should be taught each day. To expand the 18 lessons across the school year, the pacing guide devotes approximately half of the total daily science experiences to the extension activities, digital simulations, “Tell Me More” responses, and literacy articles. For example, in the “Forces and Interactions” unit there are a total of 14 days devoted to “Tell Me More” questions	BBS 3D is designed as a complete science curriculum for the entire school year. It is important to note that each lesson consists of multiple hands-on investigations and those investigations may take more than one day to complete. Submitted is a detailed pacing guide that better reflects the time required to teach BBS 3D. Please note that the Summary page on the document lists the total available instructional days. Feedback from teachers in Louisiana as well as across the nation confirms the instructional days are accurate. This pacing guide takes into account the resources that are found both in the Teacher's Guide and the online component.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			such as the Lesson 3 “Investigation C” question. The question relating to Lesson 1, “Investigation C,” is “Explain why the following sentence is false Gravity only pulls on falling objects.” This brief activity may provide opportunity for writing and discussion, but it does not provide enough material to be considered a lesson. A full day’s science instruction is an excessive amount of time to allot for such components, which are supplemental in nature and designed to be used at the teacher’s discretion. There is not enough material to provide an academic year of quality science instruction for students. This is a missed opportunity to provide additional student learning experiences that support mastery of the performance expectations of the grade level.	The pacing guide incorporates Questioning Strategies, Literacy Expository Text, Vocabulary Strategies, Connection of Driving Questions to the Lesson, Cross Curricular Instruction, and Real World Application. In addition, the pacing guide does not consider testing days or interruptions to regularly scheduled instruction time that may occur during the school year. This program is in classes throughout the US and teachers have found this to be a robust program with no need to supplement. By implementing the pacing guide and related strategies, students will have opportunities for reinforcement, remediation and application of the standards.
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 assessment opportunities exist within each lesson as students conduct investigations, respond to investigation questions, and respond to “Tell Me More” questions. Students are assessed at the end of each unit using a summative assessment that addresses all of the standards with the unit. In the “Weather and Climate Patterns” unit (page 76), ways to formatively assess	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			students for each investigation in Lesson 2 are provided. In the "Life in Ecosystems" unit (page 178), ways to formatively assess students for each investigation in Lesson 5 are provided. In the "Life in Ecosystems" unit, Lesson 1, students identify the components of an ecosystem and recognize the relationship between those organisms. Students are formatively assessed after "Investigation A" by answering a "Tell Me More" question, "Think about your how you interact with your local ecosystem. Describe a positive and a negative way you might affect this ecosystem." Students are also formatively assessed while completing student investigation sheets such as "Student Investigation, Sheet 1C." Students are required to make claims about why animal live in groups and support these claims with evidence. Additionally, at the end of each unit a summative assessment is provided with a variety of question types. The "Weather and Climate Patterns" unit includes a summative assessment with fifteen question (multiple choice, short answer, written response) that encompasses all of the standards within the unit. Lesson 5 includes a culminating task (pages 175-181) in which students identify a way to reduce the impact of a natural hazard and evaluate its effectiveness.	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
	REQUIRED **8b)** Assessment items and tasks are structured on integration of the **three-dimensions**.	**Yes**	Assessment items and tasks are structured on integration of three dimensions. Students are asked to use DCI, Cross Cutting Concepts and SEP to answer questions and complete tasks. The "Forces and Interactions" unit summative assessment, item 4 addresses standard 3-PS2-2. Students are asked to identify two reasons that a bowling ball would slow down. This requires students to apply understanding of the "Patterns" (CCC) of motion of a rolling ball and predict what will happen as the ball rolls down the lane. The teacher can analyze student responses to assess understanding of the resulting forces the ball would encounter by interacting with objects such as pins (DCI UE.PS2A.c). In the "Weather and Climate Patterns" unit summative assessment #2 addresses standard 3-ESS2-1. Students are asked to "Analyze and Interpret Data"(SEP) from a table that represents the weather conditions at noon on four different days in the winter. This addresses "Disciplinary Core Idea," UE.ESS2D.a as students have to make predictions about weather "Patterns" (CCC) based on the information given in the table.	
	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. A general rubric is provided to assess students' performance throughout each	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			unit. For example, the “Weather and Climate Patterns” unit, “Appendix A” (page 210), incorporates specific criteria for the teacher to gauge student mastery, such as, “Student’s responses indicate a higher level of thinking by drawing connections between unit concepts and phenomena.” Instructional materials also include more specific rubrics that give detailed, observable criteria related to a culminating project. For example, in the “Weather and Climate Patterns” unit (page 200), “Teacher Sheet 5B.1” identifies specific criteria related to the students’ claims, evidence, reasoning and solutions. A teacher’s version containing exemplar responses is provided to accompany each “Student Investigation” sheet. In the “Life in Ecosystems” unit, Lesson 4, students analyze a map and chart detailing location of fossils. “Student Investigation Sheet 4B.3” poses questions that require students to analyze and interpret fossil distribution data to provide evidence for their responses. For example, one item prompts students to tell why they think marine trilobite fossils are commonly found on land instead of the ocean floor. This investigation sheet directly correlates to performance expectation 3-LS-4-1 . The instructional materials provide scoring guides for the Summative Assessments at the end of each unit. The Forces and Interactions unit, page 167-170, provides an example of such. On this assessment,	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			item #7 addresses performance expectation 3-PS2-2, "make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion" as the scoring guide points the teacher to look for student responses that mention how playing surfaces produce friction that slow down the ball or puck.	
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**	Students have multiple opportunities throughout each unit to develop an understanding and demonstrate application of the three dimensions. SEP, CCC and DCI are taught when needed but most often integrated to deepen student understanding.	
	2. Phenomenon-Based Instruction	**Yes**	Although improvement is needed, a majority of the time, observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning. Investigative phenomenon at the lesson level are used to engage students and drive learning for the lesson. Investigative phenomena are related across the unit but could be improved by linking to a larger overarching anchor phenomena.	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
	3. Alignment & Accuracy	**Yes**	100% (15 out of 15) of the “Louisiana Student Standards” for grade 3 are incorporated to the full depth of the standard including accurate and up to date scientific information.	
	4. Disciplinary Literacy	**Yes**	Materials engage students in speaking and writing about scientific phenomena incorporating vocabulary as needed. Students are asked to execute various tasks including creating models and making claims.	
II: Additional Indicators of Quality	5. Learning Progressions	**No**	The instructional materials do not provide a sufficient amount of instructional opportunities for engaging students in robust three-dimensional science instruction over the progression of a full school year.	Designed for flexibility, BBS 3D is a complete science curriculum providing instructional resources for a full school year. Grade 3 has 188.5 available instructional days.
	6. Scaffolding and Support	**Yes**	There are separate teacher support materials which build teacher knowledge and assist them in providing students with robust, varied learning opportunities to deepen conceptual understanding and develop scientific thinking.	
	7. Usability	**Yes**	Text sets, laboratory, and other scientific materials are readily accessible both digitally and through vendor packaging. The laboratory kits are outlined in the unit overview and can be purchased from the company. Each unit includes strategies for establishing safety procedures in the classroom or science lab. However, additional materials and learning opportunities should be included to make the program viable for a school year.	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
	8. Assessment	**Yes**	Multiple types of formative and summative assessments are embedded in the instructional units. The assessments include items and tasks designed to measure student mastery of learning targets across the three dimensions.	
FINAL DECISION FOR THIS MATERIAL: **Tier II, Approaching 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: **Building Blocks of Science 3D** Grade/Course: **4**

Publisher: **Carolina Biological Supply Company** Copyright: **2019**

Overall Rating: **Tier II, Approaching quality**

Overall Rating: **[Choose one: Tier I, Exemplifies quality; Tier II, Approaching quality; Tier III, Not representing quality]**

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

STRONG	WEAK
1. Three-dimensional Learning (Non-Negotiable)	5. Learning Progressions
2. Phenomenon-Based Instruction (Non-Negotiable)	
3. Alignment Accuracy (Non-Negotiable)	
4. Disciplinary Literacy (Non-Negotiable)	
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	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, 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 scientific content knowledge and 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. The “Energy Works” unit addresses standard 4-PS4-1. The CCC, “Patterns,” is addressed separately when necessary, but it is most often integrated with the other dimensions to support deeper learning. In Lesson 4, students identify wave patterns, use a series of patterns to send and receive “Morse” code messages, and use a slinky to concretely define patterns. Students use their knowledge of patterns to understand the DCI, energy waves have predictable patterns. They also engage with the science and engineering practice, develop and use a model, as they investigative how waves can change shape and increase energy in a system. At the conclusion of the lesson, students connect the crosscutting concept of patterns in multiple situations as it relates to waves.	

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			The "Changing Earth" unit addresses standard 4-ESS2-2. The SEP, analyze and interpret data, and DCI are appropriately addressed in the unit. In Lesson 1, "Investigation B," students investigate tectonic plates and discuss the shifting of those plates as evidenced by changes in Earth's structure. Students continue investigating tectonic plates and pair this with the location of volcanoes to make connections between the two (page 42). In "Investigation C," the CCC and DCI are also appropriately addressed. Students identify the causes and noticeable effects of earthquakes and discuss how Earth's mantle causes its plates to move. Throughout the unit the three dimensions are integrated to support deeper learning.	
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**	Although improvement is needed, a majority of the time, observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning. For each unit, the instructional materials identify a descriptive narrative and short online video as the anchor phenomenon. While these videos and descriptive narratives offer exposure to scientific content, they do not serve as anchoring phenomena that are puzzling, complex experiences driving the learning that follows.	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			While phenomenon-based learning is not evidenced at an anchoring level, at an investigative level, phenomena serve to provide the purpose and opportunity for learning across the majority of lessons. Each lesson begins with a paragraph for the teacher to read aloud to students. Although lacking in variety of format, a majority of the presented investigative phenomena adequately provide opportunity for learning. For example, in the "Plant and Animal Structures" unit Lesson 4, the teacher invites students to think about regular check ups at a doctor visit to assess internal health and to consider what it makes them wonder. Later in the lesson, after dissecting a sheep's brain, students participate in a class discussion (page 126) in which they use evidence to support a claim that you either can or cannot function without a brain. In doing so, students explain that the brain interprets information received from the senses and controls corresponding actions. This discussion supports the Lesson 4 investigative phenomenon (page 118) that a doctor hits your knee or shines a light in your eye, then observes reactions to determine if your nerves are working properly. In some instances, investigative phenomena provide purpose and opportunity for students to design solutions. For example, in the "Energy Works" unit, Lesson 6, the teacher	

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			presents the following as an investigative phenomenon for students to discuss " In addition to using more renewable energy, we are constantly looking for new ways to develop energy-efficient machinery. Every day, engineers are designing new products that require less energy to function. A few examples include solar-powered charging stations, motion-sensing lights, and LED lights, which are found in many new TVs and car lights." Through the lesson, this phenomenon supports and drives learning as students become engineers themselves using SEP to create a device and explore ways of improving that device. Students work together to design, test, and improve a device that converts one form of energy to another. Students use an engineering cycle to develop ideas and plan a device (page 212). After constructing the device and testing it students have time to analyze the results and make changes or improvements.	
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	A majority, 13 out of 14 or 93%, of Louisiana Student Standards for grade 4 are appropriately addressed by the instructional materials. These standards are addressed to the full depth of the standard and include various opportunities for student learning. Standard 4-ESS2-3 is the only standard that is not addressed by the instructional materials. The "Plant and Animal Structures" unit appropriately addresses standard 4-PS4-2. The "Science and Engineering Practice,"	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			"Developing and Using Models," and DCI are appropriately addressed. In Lessons 5 and 6, students generate and revise a model of an eye. Students use their models to illustrate the movement of light as it moves from a source, is reflected by an object, and enters the eye. The crosscutting concept, cause and effect, is also appropriately addressed. Students investigate how the amount of light in a room impacts the size of a person's pupil and his ability to make sense of objects in the room. The "Changing Earth" unit addresses standard 4-ESS2-1. The SEP, plan and carry out an investigation, and DCI are appropriately addressed. In Lesson 3, students use a stream table to model and investigate how water can shape Earth's landforms. The CCC, cause and effect, is also appropriately addressed. During the investigation, students add vegetation to the stream and discuss how it affects the flow of water and the shape of land. They also make predictions about how erosion by wind and ice might affect landforms.	
	REQUIRED **3b)** Science content is **accurate**, reflecting the most current and widely accepted explanations.	**Yes**	All reviewed content was accurate, up-to date and aligned with the most current and widely accepted explanations. No evidence could be found of incorrect or out of date science 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 course or grade-band. 81 % or 13 of 16 standards addressed focus on Louisiana Student	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			Standards for grade 4. Three of the standards that do not fall within the Louisiana standards are 4-PS4-3, 3-5 ETS 1-2, and 3-5 ETS 1 - 3. Although the "Engineering and Technology" standards are included in the program, they enhance teaching and learning and do not distract from the overall learning target.	
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 have multiple opportunities to regularly engage with authentic resources that represent the language and style that is used and produced by scientists. Authentic photographs, graphs, and news articles are regularly included in the materials. The "Changing Earth" unit, Lesson 2, includes a photograph that represents the patterns that are created in a rock formation after it's eroded by wind (page 40). The "Energy Works" unit, Lesson 3, includes a photograph that demonstrates energy transfers and transformations in simple circuits (page 89). The "Energy Works" unit, "Interactive Reader," includes a graph that depicts the percentages of energies used in the United States. In the "Changing Earth On-Grade Level Student Reader" (page 23) students can read about the authentic science careers of petrologists, see what petrologists do,	

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			and find out how to prepare for a career as a petrologist. Additionally, in the "Plant and Animal Structures On-Grade Level Student Reader" (page 15) students can read about the authentic science career of a biomimicry engineer, see what biomimicry engineers do, and find out how to prepare for a career as a biomimicry engineer. In the "Innovators in Science" section located under the Literacy connections tab within the online platform, students can access articles about scientists that give biographical information and their contributions to science. For example, in the article about Carlos Juan Finlay, students learn about his contribution to the field of medicine through his work related to yellow fever and about the carrier of the disease (mosquitoes) which later led to mosquito abatement programs to control the disease. In the "Changing Earth" unit, Lesson 6, students are assigned a Science in the News Article Report about the negative effects of soil erosion (page 115) which is selected by the teacher from current authentic sources. A rubric is provided in "Appendix B" to assist the teacher in selecting an article that is credible and from a reliable source. In the "Plants and Animals" unit, Lesson 2, students read and respond to Literacy	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			Article 2B, “How Many Stomachs Does it Take?” This nonfiction article explains that different animals have different body structures that help them survive. For example, the cow has a series of four stomachs to help it break down and filter food so that nutrients can be absorbed in the small intestine.	
	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 phenomenon and engineering solutions. Students discuss scientific phenomena using authentic sources and use scientific evidence from the sources and investigations to support scientific claims and ideas. The “Energy Works” unit, Lesson 1, begins with a discussion about energy. The teacher poses questions to students such as, “What does it mean when someone says that you have a lot of energy? and Why does your body need energy? ” to determine what knowledge students already have. Students discuss how plants and animals get energy and the sun’s role in this cycle (page 38). By asking these leading questions, students can begin developing thinking related to the investigative phenomenon for Lesson 1 as stated, “Before a race, coaches tell their runners to eat a healthy meal of pasta, fruits, or vegetables.” Materials address the necessity of using scientific evidence to support scientific ideas. For example, in the Energy Works	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			unit, Lesson 2, students discuss, plan, and record the steps to investigate the transfer of energy when a ping pong ball is dropped from different heights (page 56). Students collect evidence and use evidence from the investigation to support a claim that the higher the height from which a ball is dropped, the more stored energy it has to be transferred to motion energy when it is dropped. An increase in motion energy results in a higher bounce when the ball collides with the floor. This claim supports the Lesson 2 "Phenomenon" (page 48) that wind and precipitation may cause rocks to break loose and fall from the sides of steep cliffs. The higher the rock is on the cliff, the more stored energy it has to be transferred into motion energy as it falls. Later, in Lesson 4, "Investigation C," Activity 10 (page 129) of the "Plant and Animal Structures" unit, students use evidence and examples to answer the question, "How do senses and the ability to process information help humans and animals survive?" ("Student Investigation, Sheet 4C, Part F"). After answering in writing, students share their evidence in a group discussion. Student evidence should support the claim that external structures receive information from the senses which transfer that information to an internal structure, the brain. The brain processes the information and tells the organism how to respond in order to survive such as seeing, hearing, or smelling a predator and	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			running in response. Again, this supports the Lesson 4, "Investigative Phenomenon" (page 118) that a doctor hits an external structure, the outside of your knee. Your sense of touch sends a message to your brain which tells your leg how to respond, kick. This helps students understand that internal and external structures function effectively under certain conditions. If there is damage to an external structure that prevents an organism's senses from collecting information or damage to an internal structure that might prevent the brain from processing the information, then the organism will not know how to respond or will not do so effectively and may die.	
	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, completing investigations, making claims, and designing solutions to problems. In the "Plant and Animal Structures" unit, students observe what changes take place as a piece of celery is placed in a cup of water with dye (page 94) and construct explanations about how the internal structures of the plant function. Students investigate the internal structures of plants as they dissect a flower (page 97). In the "Changing Earth" unit, students design a solution and develop a model to prevent soil erosion (page 116). In the	

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			Plant and Animal Structures unit, students produce solutions to problems by creating a model of a more powerful human eye (pages 179-180). In the “Energy Works” unit, “Investigation 2, Part C” (page 60), students conduct an investigation to observe the changes in energy as two marbles are rolled into each other. In item 6 of “Student Investigation, Sheet 2C,” students make a claim about the total energy in this system and use evidence from observations to support claims.	
	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.	**Yes**	Vocabulary is presented at the beginning of each unit as part of the teacher notes and addressed within the unit as needed. Students build an understanding of terms through investigations, and then the teacher introduces terms and verifies that students have an understanding of them. In the “Energy Works” unit, students develop an understanding of “stored energy” and “motion energy” as they observe a stationary object move and fall to the ground (page 52). In the “Plant and Animal Structures” unit, Lesson 2, students create a chart with two columns labeled vertebrates and invertebrates after a discussion of the skeletal system. The teacher gives examples of animals that have endoskeletons (wolves and elephants) and exoskeletons (beetles and crabs) and asks students to develop a definition for each term in their own words (page 54-55).	

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			In the "Changing Earth" unit, Lesson 1, Activity A, the teacher uses the "Earth's Layers Simulation" (page 37) to introduce the layers of the Earth crust, mantle, core. To increase their understanding of this new vocabulary, students then make a model to represent the layers (page 38).	
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.	**No**	The progression of learning is not coordinated and organized over time in a manner that supports student mastery of the performance expectations. The instructional units fail to include enough material for engaging students in robust three-dimensional science instruction over the progression of a full school year; therefore, students do not have an adequate amount of learning opportunities to fully engage with the grade level standards to build the understanding and proficiencies required to master the associated performance expectations. See indicator 7c.	BBS 3D is designed as a complete science curriculum for the entire school year. It is important to note that each lesson consists of multiple hands-on investigations and those investigations may take more than one day to complete. Submitted is a detailed pacing guide that better reflects the time required to teach BBS 3D. Please note that the Summary page on the document lists the total available instructional days. Feedback from teachers in Louisiana as well as across the nation confirms the instructional days are accurate. This pacing guide takes into account the resources that are found both in the Teacher's Guide and the online component. The pacing guide incorporates Questioning Strategies, Literacy Expository Text, Vocabulary Strategies, Connection of Driving Questions to the Lesson, Cross

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
				Curricular Instruction, and Real World Application. In addition, the pacing guide does not consider testing days or interruptions to regularly scheduled instruction time that may occur during the school year. This program is in classes throughout the US and teachers have found this to be a robust program with no need to supplement. By implementing the pacing guide and related strategies, students will have opportunities for reinforcement, remediation and application of the standards.
	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.	**No**	The materials present some opportunity for students to apply mathematical thinking. Math skills beyond the grade level's expectations in the Louisiana Student Standards for Mathematics are introduced. For example, in the "Plant and Animal Structures" unit, Lesson 5, the "Eye Measurements" activity (page 167) calls for students to convert values representing measurements of animal eye circumferences to various other metric units (mm, cm, and km). The activity also calls for students to then write expressions comparing these values. The materials identify "0.00027 km > 24 mm" as one sample student response. This is beyond	Details of the BBS 3D math connections are provided in the submitted file BBS3D LA IMET 5b evidence_math. The following standards have connections in Grade 4: o 4G.A.1, 4G.A.2 o 4.MD.A, 4.MD.A.1, 4.MD.A.2, 4.MD.B, 4.MD.C.5, 4.MD.C.6 o 4.NBT.A, 4.NBT.A.2, 4.NBT.B o 4.OA.A.2, 4.AO.A.3, 4.OA.C, 4.OA.C.5 o 4.NF.A, 4.NF.B, 4.NF.B.3, 4.NF.C , 4.NF.C.7

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			the mathematics grade level expectation to compare two decimals to hundredths by reasoning about their size (4.NF.C.7). Also, conversion within a system of units in grade 4 is limited to one step conversions (4.MD.A.1).	
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, including teacher background prior to each lesson, notes within the margins to identify and address student misconceptions and rubrics to assess student readiness. Each lesson overview includes content related to the DCI to support the development of teachers' background knowledge. In the "Changing Earth" unit, Lesson 1 (page 36), teachers are given information about plate tectonics, parts of the Earth's crust, and how the movement of those plates causes changes in the Earth prior to teaching the lesson which is centered on this content. Supports to help teachers identify and address misconceptions are also included. In the Plants and Animals unit, Lesson 3, teachers are advised to dispel the misconception that seeds are only found in plants that produce fruit (page 88). In the "Energy Works" unit, Lesson 4, teachers are advised to address the misconception that water waves move from side to side (page 134). Rubrics are included within the materials to help teachers assess mastery of content and performance on the culminating	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			project at the end of each unit. In the "Changing Earth" unit Appendix A (page 142) teachers have access to a general rubric that addresses the areas of exploration, vocabulary, concept development and the science notebook. This rubric can be used to determine if students are mastering these areas at the end of each lesson. More specific rubrics can be found at the end of each unit and are related to the culminating task. For example at the end of the "Energy Works" unit Lesson 6 , students design and complete an energy experiment to answer student generated questions. Teachers can use "Teacher Sheet 6C, My Energy Experiment Rubric" to assess the group's planning, conclusion and overall presentation.	
	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 are given to support diverse learners and ensure that all students master the content. A "Differentiation Strategies" section is included at the beginning of each unit (page xiv). Here teachers can find suggested strategies and resources for differentiation of instruction. A Scaffolding chart is additionally provided in each unit to help teachers gauge each student's achievement level (page xxii-xxiii). Finally, content specific strategies are called out in the margins of the "Teacher's Manuals" (page numbers vary).	

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			In the “Changing Earth” unit, the “Plant and Animals Structures” unit, and the "Energy Works" unit it is recommended that teachers differentiate labs by grouping students by ability and/or by modifying the investigation procedures. It is additionally suggested that teachers incorporate literacy and digital components to deepen understanding and help students make real-world connections (page xvi). Teachers can utilize the “Evidence of Instructional Scaffolding” section, which provides specific outcomes that students should achieve as they progress through the unit, to gauge students understanding of concepts. For example, in the “Energy Works” unit (page xxii) after teaching Lesson 2 and engaging in investigations using ping pong balls and marbles to observe and record the results of changes in motion, students should know and understand that energy can exist as stored or motion energy which exists in many forms and that motion and energy are related. It is suggested that students who master the concept quickly be provided a leadership role in the lesson or an opportunity for independent study while additional practice and review is provided to students who need additional support. Suggestions on how to support students are also include in the margins of the teacher’s manual. For example, in the “Changing Earth” unit, Lesson 1,	

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			"Investigation B, Teaching Tip," advises teachers to review continents before introducing tectonic plate boundaries (page 40). A "Differentiation Strategy" is also included, which suggests that students color continents to better identify them and their boundaries (page 40). Also, in the "Energy Works" unit, Lesson 1, students identify energy sources and describe ways energy is used. Within the margin of the teacher's manual, teachers are instructed to ask students to draw a picture or perform a skit to define the term energy instead of writing a definition (page 41) .	
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**	Student text, laboratory sheets, and other scientific materials are readily available through vendor packaging. Students may access student readers and interactive readers online through the vendor portal. Student laboratory sheets, investigation sheets, and literacy articles are available in PDF format and online through the vendor portal. Scientific materials that are needed for experiments are listed, and most are included in vendor packaging according to the supply lists included within the teacher's manual. For example, in the "Changing Earth" unit, a list of Kit Materials is provided on page xxxi. Some of the listed materials include clay, craft dough, soil, fluted catch pan, marbles, and casting powder.	

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			Student Readers are provided for each unit. For example, in the “Energy Works” unit, a below grade level and on grade level reader are provided entitled, “Energy Works” (page xxxi). Literacy articles are found in each unit. For example, in the “Plant and Animal Structures” unit, “Literacy and Science Article 2A, All About Squid” is found on page 65 and “Literacy Article 2B, “How Many Stomachs Does it Take?” is found on page 69. Student Investigation Sheets are provided in each unit. For example, in the “Changing Earth” unit “Student Investigation Sheet 2A, “What types of Rocks Exit?” is included to help students record the texture and color of various rocks (page 61). “Student Investigation Sheet 2B, “What is the Rock Cycle?” helps students organize the events that transpire as rock changes form (page 62).	
	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**	The materials help students build an understanding of standard operating procedures in a science laboratory and include safety guidelines, procedures, and equipment. Each unit includes strategies for establishing safety procedures in the classroom or science lab, as well as a safety contract. For example, within the “Plant and Animal Structures” unit a safety contract can be found on page xviii. On page xvii, the text suggests that teachers create a chart titled “Safety Rules for the	

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			Science" lab and facilitate a class discussion to record these rules. Safety procedures are also called out as needed within lessons. For example, in the Changing Earth unit, students model sedimentary and metamorphic rocks using crayon shavings. When students are working with hot water A Safety Tip (page 55) is provided stating, "Tell students to exercise caution when handling hot water. Students should handle the aluminum foil and avoid contact with the water." The "Plant and Animal Structures" unit, Lesson 4, includes a "Teacher Preparation" note that instructs teachers to review the "Safety Data Sheet for Specimens," which is located at www.carolina.com before handling the sheep brain specimen (page 120). Outlined within Lesson 4, "Investigation B, Activities 5 and 6" (page 126) safety tools and procedures are again discussed with students. Teachers are instructed to, "Direct all students to put on the gloves, aprons, and safety goggles and gather around the location you selected for the sheep brain dissection. Model safety by wearing gloves, an apron, and safety goggles yourself."	
	7c) The total amount of content is **viable** for a school year.	**No**	The total amount of content is not viable for the school year. The instructional materials contain 3 units with 6 lessons in each. The content provided is inadequate to provide robust science instruction that involves students in doing science for the full length of the school year.	BBS 3D is designed as a complete science curriculum for the entire school year. It is important to note that each lesson consists of multiple hands-on investigations and those investigations may take more than one day to complete.

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			The "180-Day Instructional Pacing Guide" provides guidance on pacing of content by indicating what should be taught each day. To expand the 18 lessons across the school year, the pacing guide devotes approximately half of the total daily science experiences to the extension activities, digital simulations, "Tell Me More" responses, and literacy articles. For example, in the "Plant and Animal Structures" unit, there are a total of 14 days devoted to "Tell Me More" questions such as the Lesson 5, "Investigation A" question. The question, "Explain the importance of the retina. What would happen if the retina were damaged?" does provide opportunities for writing and discussion, but does not provide enough material to be considered a lesson. A full day's science instruction is an excessive amount of time to allot for such components, which are supplemental in nature and designed to be used at the teacher's discretion. There is not enough material to provide an academic year of quality science instruction for students. This is a missed opportunity to provide additional student learning experiences that support mastery of the performance expectations of the grade level.	Submitted is a detailed pacing guide that better reflects the time required to teach BBS 3D. Please note that the Summary page on the document lists the total available instructional days. Feedback from teachers in Louisiana as well as across the nation confirms the instructional days are accurate. This pacing guide takes into account the resources that are found both in the Teacher's Guide and the online component. The pacing guide incorporates Questioning Strategies, Literacy Expository Text, Vocabulary Strategies, Connection of Driving Questions to the Lesson, Cross Curricular Instruction, and Real World Application. In addition, the pacing guide does not consider testing days or interruptions to regularly scheduled instruction time that may occur during the school year. This program is in classes throughout the US and teachers have found this to be a robust program with no need to supplement. By implementing the pacing guide and related strategies, students will have opportunities for reinforcement,

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				remediation and application of the standards.
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 assessment formative and summative are in the instructional materials. Formative assessment opportunities exist within each lesson as students conduct investigations, respond to investigation questions, and respond to "Tell Me More" questions. Students are formally assessed at the end of each unit using a summative assessment that addresses all of the standards with the unit. In the "Energy Works" unit, Lesson 3, "Investigation C," students use SEP to conduct three investigations. Students respond to questions on "Student Investigation," pages 3C.1, 3C.2, and 3C.3. While investigating energy transformations within this investigation, students interact with circuits and identify the effects of the change in energy within the system. Before the investigation, students are asked to make predictions with questions such as, "How will the energy in the circuit change if more batteries are added?" and "How can I determine how the mystery box works?". Students plan and investigate, observe and record, and then draw conclusions from the investigation by answering questions such as, "What evidence can we use to describe that energy was transferred in this system?". At the end of the unit students take a summative assessment that includes all	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			content from the unit and complete a culminating project in lesson 6 of each unit. At the end of the “Plant and Animal Structures” unit, students complete a summative assessment including fourteen questions based on the three standards (4-LS1-1, 4-LS1-2, and 4-PS4-2) within the unit. Students also complete a culminating project at the end of each unit. For example, at the conclusion of the “Changing Earth” unit, Lesson 6, Investigation B (pages 117-118), students generate a model to test solutions that prevent erosion. In Lesson 6, Investigation C (pages 118-119), students present their solutions with the class. Teachers may use the Presentation Rubric to assess student understanding.	
	REQUIRED **8b)** Assessment items and tasks are structured on integration of the **three-dimensions**.	**Yes**	Assessment items and tasks are structured on integration of three dimensions. Students are asked to use DCI, Cross Cutting Concepts and SEP to answer questions and complete tasks. For example, on the summative assessment within the “Changing Earth” unit, item 10 asks students to identify two variables in an experiment in which a student models how deltas form with a stream table. This item addresses standard 4-ESS2-1 and encompasses the SEP of “Planning and Carrying Out Investigations” and the CC of “Cause and Effect.” The “Energy Works” unit summative assessment item 3, “Match each action below with the energy transformation that	

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			makes it happen," requires students to use DCI (DCI UE.PS3.B.c) and the Cross Cutting Concept ("Cause and Effect"). The "Plant and Animal Structures" summative assessment question 6 addresses standard 4-LS1-1 and asks students to analyze and interpret data (illustrations of turtles) and explain which animal has adapted to the ocean (SEP constructing explanations). For example, in the "Plant and Animal Structures" unit, Lesson 2, students read a literacy article, "All About Squid" and respond to questions related to the content. Students "Engage in Argument [Using] Evidence" (SEP) that squid have internal and external structures that help them survive and grow (DCI UE.LS1.A.a). While addressing standard 4-ESS1-1 in the "Changing Earth" unit Lesson 2 "Investigation A," students are given several types of rocks. Students are then able to "Analyze and Record Data" (SEP) in a table on "Student Investigation, Sheet 2A" to determine the texture and color of each rock they are observing. Students are then prompted to look for "Patterns" (CCC) through the suggested teacher question, "Do you notice any patterns between rock type and color or texture?". In the "Energy Works" unit Lesson 2, students respond to the "Tell Me More" writing prompt "If you park your car in the sunlight for a long time, the seats might become very hot. Explain this in terms of energy transfer." This question requires	

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			students to use the SEP "Constructing Explanations" and apply knowledge about how energy transfers from place to place (DCI UE.PS3B.c) in the context of the "Crosscutting Concept" of "Energy and Matter."	
	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. A general rubric is provided to assess students' performance throughout each unit. For example, the "Energy Works" unit, "Appendix A" has a general rubric that measures exploration, vocabulary, concept building, and the science notebook. Instructional materials also include more specific rubrics that gives detailed, observable criteria related to the culminating project. For example, in the "Plant and Animal Structures" unit students create an eye model and the teacher uses the eye model rubric on Teacher sheet 6B to assess students on presentation, model and the description students give. In the "Changing Earth" unit, a rubric provided on "Teacher Sheet 6C" is included to measure student performance on a design solution task in which students are required to generate and test multiple solutions that prevent the problem of erosion. This rubric is specifically aligned with performance expectation 4-ESS3-2. A Teacher's version containing exemplar	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			responses is provided to accompany each Student Investigation sheet.	
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**	Students have multiple opportunities throughout each unit to develop an understanding and demonstrate application of the three dimensions. SEP, CCC and DCI are taught when needed but most often integrated to deepen student understanding.	
	2. Phenomenon-Based Instruction	**Yes**	Although improvement is needed, a majority of the time, observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning. Investigative phenomenon at the lesson level are used to engage students and drive learning for the lesson. Investigative phenomena are related across the unit but could be improved by linking to a larger overarching anchor phenomena.	
	3. Alignment & Accuracy	**Yes**	93% (13 out of 14) of the "Louisiana Student Standards" for grade 4 are incorporated to the full depth of the standard including accurate and up to date scientific information.	
	4. Disciplinary Literacy	**Yes**	Materials engage students in speaking and writing about scientific phenomena	

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			incorporating vocabulary as needed using authentic sources. Students are asked to execute various tasks including creating models and making claims.	
II: Additional Indicators of Quality	5. Learning Progressions	**No**	The instructional materials do not provide a sufficient amount of instructional opportunities for engaging students in robust three-dimensional science instruction over the progression of a full school year.	Designed for flexibility, BBS 3D is a complete science curriculum providing instructional resources for a full school year. Grade 4 has 205.5 available instructional days.
	6. Scaffolding and Support	**Yes**	There are separate teacher support materials which build teacher knowledge and assist them in providing students with robust, varied learning opportunities to deepen conceptual understanding and develop scientific thinking.	
	7. Usability	**Yes**	Text sets, laboratory, and other scientific materials are readily accessible both digitally and through vendor packaging. The laboratory kits are outlined in the unit overview and can be purchased from the company. Each unit includes strategies for establishing safety procedures in the classroom or science lab. However, additional materials and learning opportunities should be included to make the program viable for a school year.	
	8. Assessment	**Yes**	Multiple types of formative and summative assessments are embedded in the instructional units. The assessments include items and tasks designed to measure student mastery of learning targets across the three dimensions.	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
FINAL DECISION FOR THIS MATERIAL: **Tier II, Approaching 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: **Building Blocks of Science 3D** Grade/Course: **5**

Publisher: **Carolina Biological Supply Company** Copyright: **2019**

Overall Rating: **Tier II, Approaching quality**

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

STRONG	WEAK
1. Three-dimensional Learning (Non-Negotiable)	5. Learning Progressions
2. Phenomenon-Based Instruction (Non-Negotiable)	
3. Alignment Accuracy (Non-Negotiable)	
4. Disciplinary Literacy (Non-Negotiable)	
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	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, 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 scientific content knowledge and 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 "Structures and Properties of Matter" unit, students begin Lesson 1 (pages 38-58) by creating a working definition of matter through discussion and the states of matter as the teacher demonstrates the three states of matter. Students engage in the SEP by make observations to distinguish the differences between the three states of matter (page 40). Students plan, calculate the volume and mass of various objects using standard units which addressed the CCC (wax block, marbles, water , and modeling clay), and analyze that data (page 43). Finally, students investigate the mass and volume of a gas by using a balloon and a scale addressing the SEP. Throughout this investigation, students take a variety of measurements to identify various	

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			properties of matter which addresses the DCI UE.PS1.A.c. In the "Earth and Space Systems" unit, Lesson 3 previews the following 3D elements to support Performance Expectation 5-ESS1-2 SEP (Analyzing and Interpreting Data, Developing and Using Models, Engaging in Argument from Evidence), DCI (ESS1B Earth and the Solar System), and CCC (Patterns and Scale, Proportion, and Quantity). In investigations A, B, and C (pp 91-102) students connect to CCC as they explore the relationship between the Sun, Moon, and Earth and its effect on both the Moon and Earth which supports the DCI dealing with orbits of Earth around the Sun and of the Moon around Earth. SEPs are realized as students analyze and interpret data when graphing the amount of daylight to look for patterns then develop a model of the phases of the moon and engaging in argument from evidence for what causes patterns of daylight. In the "Matter and Energy in Ecosystems" unit, on pages 43-44 energy and matter (CCC) is addressed as students are asked to design and complete an investigation to determine how plants get energy. Organization for matter and energy flow in organisms (DCI) is addressed on pages 41-42 as students investigate photosynthesis and how plants receive energy from air and water. Asking questions and defining	

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			problems (SEP) is addressed on the same pages as students investigate how plants grow and then again on pages 43-44 as students ask questions among their groups to design an investigation to determine how plants grow.	
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**	While phenomenon-based learning is not evidenced at an anchoring level, at an investigative level, phenomena serve to provide the purpose and opportunity for learning across the majority of lessons. Each lesson begins with a paragraph for the teacher to read aloud to students. Although lacking in variety of format, a majority of the presented investigative phenomena adequately provides opportunity for learning. In the "Earth and Space Systems" unit, Lesson 3, the investigative phenomena compares the amount of light during the day in the spring and the fall seasons. It also discusses how the shape of the moon changes throughout a months period. Students engage in investigations driven by this phenomenon, by building models of the earth, moon, and sun while looking for patterns. Students discuss, while building their models, how light might be affected during the day in different points in the Earth’s path around the sun. Students also investigate, through this model, the different phases of the moon. In the "Matter and Energy in Ecosystems" unit Lesson 6, the investigative	

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			phenomenon is as follows: Composting is more common today and research shows that people who plant gardens using homemade compost have more success than those who use store-bought fertilizer. However, not all trash is good for composting—what does this make you wonder?(p 168) Teachers are provided examples of questions that should be expected from students (p 168). This frames the investigations that follow A--Can We Develop Solutions to Decrease Human Impact? (pp 171-172); B—"Can I Communicate Solutions for Human Impact? (pp 172-173).	
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**	All of Louisiana Student Standards for grade 5 are appropriately addressed by the instructional materials. These standards are addressed to the full depth of the standard and include various opportunities for student learning. The "Structures and Properties of Matter" unit appropriately addresses standard 5-PS1-1. The science and engineering practice, engaging in argument from evidence, cross-cutting concept of cause and effect, and DCI are appropriately addressed. Students begin observing a demonstration of the three states of matter (pages 66-67), inferring that the observed changes such as squeezing a balloon or pouring liquids into different containers relate to particles too small to be seen (CCC). As students observe	

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			changes in the state of water, it is clear that energy is added to the water particles (DCI) to cause the change. Students use marbles to develop a model of what particles look like within matter in the various states (SEP, PE) and then create a drawing of this model (page 69). In the “Matter and Energy in Ecosystems” unit, the performance expectation 5-ESS2-1 is addressed as students draw a model of the four spheres of the earth and how they interact with each other. Through this students “develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.” Students further develop and draw a model of the four spheres (SEP) and explain how the four spheres interact with one another (DCI and CCC).	
	REQUIRED **3b)** Science content is **accurate**, reflecting the most current and widely accepted explanations.	**Yes**	All reviewed content was accurate, up-to date and aligned with the most current and widely accepted explanations. No evidence could be found of incorrect or out of date science 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 course or grade-band. 87 % or 13 of 15 standards addressed focus on Louisiana Student Standards for grade 5. Two of the standards that do not fall within the Louisiana standards are 3-5 ETS 1-2 and 3-5 ETS 1 - 3.	

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			Although the "Engineering and Technology" standards are included in the program, they enhance teaching and learning and do not distract from the overall learning target	
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 sources that represent the language and style that is used and produced by scientists including authentic photographs, diagrams, news articles and non-fiction articles. The "Earth and Space Systems" unit includes images and diagrams. A scaled image of the Earth and sun is included on "Teacher Sheet 1B" and a diagram of the Sun, Moon, Earth System on "Teacher Sheet 1C." Within the Interactive Reader, students are exposed to authentic photographs. While describing the biosphere and geosphere, pictures of parrots and lava flow are used (pages 7 and 9). In the "Structure and Properties of Matter" unit, Lesson 6, students are assigned a "Science in the News" article report about water quality or wastewater treatment facilities (page 173), which is to be selected by the teacher from current authentic sources. A rubric is provided in "Appendix B" to assist the teacher in selecting an article that is credible and from a reliable source.	

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			In the “Matter and Energy in Ecosystems” unit, Lesson 5, “Literacy Resources The Amazing Potato,” the potato is examined as a major part of American food consumption and as an important part of an individual’s diet, especially as an energy source. The article examines the history and classification of the potato and introduces its parts. Questions for students invite them to reflect on why potatoes are popular, the best habitat for potatoes, and why they are good energy sources (p 138). In the “Innovators in Science” section located under the “Literacy connections” tab within the online platform, students can access non-fiction articles about scientists that give biographical information and their contributions to science. For example, this section contains an article about Hugh Herr and his contributions to the world of prosthetic limbs. The article tells how, by combining technology and the mechanics of prosthetic limbs, he became a leader in the field of biomechatronics. Links to additional articles about Hugh Herr and his work are also included.	

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	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 phenomenon and engineering solutions. Students discuss scientific phenomena using authentic sources and use scientific evidence from the sources and investigations to support scientific claims and ideas. In the “Earth and Space Systems” unit, "Student Investigation", "What Can I Learn From the Brightness of a Star?" (page 62), students must make a claim, provide evidence, and then reason to justify why the evidence supports the claim based on the investigation about the Sun. In the “Structures and Properties of Matter” unit, Lesson 5, students write and speak about the phenomenon of chemical and physical change. Students discuss physical and chemical change while engaging with modeling clay and burned paper (page 153). Students complete a chart listing evidence of chemical and physical changes (page 154). The “Tell me More” question, “Would a chemical Change occur if we placed dough in the freezer?” requires students to write a response using evidence from the investigation. In “Matter and Energy in Ecosystems" unit, Lesson 1, “Investigation C,” students design and complete an investigation to determine what plants need to grow. As they carry out that investigation, they collect data based on what they see from	

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			the investigation they designed. This investigation links directly back to the investigative phenomena video. In the video, they discuss how animals and plants get their energy and that they need energy to grow and survive (pages 43-44).	
	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, drawing conclusions, conducting tests, and designing solutions to problems. In the "Matter and Energy in Ecosystems" unit, Lesson 1, students observe plants as they grow and record data such the height of the plant (page 44). In "Matter and Energy in Ecosystems" unit, Lesson 5, "Human Impact, Investigation C" (141-142), students simulate water pollution in their ecocolumn through a focus on a specific variable. Students first predict, then collect and analyze data, come to a conclusion, and then develop ways to limit water pollution in the real world. In the "Structure and Properties of Matter" unit, Lesson 2, "Energy and States of Matter, Investigation A" (pp 66-69) students are challenged to create a model that will accurately demonstrate the movement and attraction of particles in	

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			each state of matter using a specific array of materials then share and explain. In the “Structure and Properties of Matter” unit, Lesson 6, students are asked to design and test a water filtration system (page 174). In the “Earth and Space Systems” unit, Lesson 2, "Investigation A", students are performing a task to determine why some stars appear brighter in the nighttime sky. This links back to the investigative phenomena, which has students discussing what they see when they go out at night and look at the sky. This would further have students asking why some stars appear brighter than others.	
	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.	**Yes**	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. In the “Matter and Energy in Ecosystems” unit, Lesson 4, “Investigation C, What Is an Ecocolumn?” (pp 113-114), the teacher facilitates a review of the spheres of Earth while discussing how energy is cycled through an ecosystem. Students are then given an example of a common or local reference of an ecosystem. The term	

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			"ecocolumn" is then introduced as a small model of an ecosystem. In the "Earth and Space Systems" unit, Lesson 3, "Investigation B", students observe patterns of the moon phases. This very naturally has students using the vocabulary linked to this investigation- moon, moon phase, waning, and waxing- without teaching it in isolation. The vocabulary is not addressed individually, but within the investigation, giving students a deeper understanding of the vocabulary (pages 94-96). In the "Structure and Properties of Matter" unit, Lesson 2, the teacher demonstrates changes in the state of water by boiling and freezing water. After a discussion of the students' observations, a definition for freezing point, melting point , and boiling point is written in the science notebook (page 68).	
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	**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.	**No**	The progression of learning is not coordinated and organized over time in a manner that supports student mastery of the performance expectations. The instructional units fail to include enough material for engaging students in robust three-dimensional science instruction over the progression of a full school year; therefore, students do not have an adequate amount of learning	BBS 3D is designed as a complete science curriculum for the entire school year. It is important to note that each lesson consists of multiple hands-on investigations and those investigations may take more than one day to complete. Submitted is a detailed pacing guide that better reflects the time required to teach BBS 3D. Please note that the Summary

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
content complements the the Louisiana Student Standards for Math. ☐ Yes ☒ No			opportunities to fully engage with the grade level standards to build the understanding and proficiencies required to master the associated performance expectations. See indicator 7c.	page on the document lists the total available instructional days. Feedback from teachers in Louisiana as well as across the nation confirms the instructional days are accurate. This pacing guide takes into account the resources that are found both in the Teacher's Guide and the online component. The pacing guide incorporates Questioning Strategies, Literacy Expository Text, Vocabulary Strategies, Connection of Driving Questions to the Lesson, Cross Curricular Instruction, and Real World Application. In addition, the pacing guide does not consider testing days or interruptions to regularly scheduled instruction time that may occur during the school year. This program is in classes throughout the US and teachers have found this to be a robust program with no need to supplement. By implementing the pacing guide and related strategies, students will have opportunities for reinforcement, remediation and application of the standards.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
	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 applicable grade's expectations in the Louisiana Student Standards for Mathematics. In the "Structure and Properties of Matter" unit, Lesson 1, "Investigation B", students are asked to find volume. (5.MD.5b) In the "Structures and Properties of Matter" unit, Lesson 5 (page 158), students are asked to solve word problems involving liquid measure in milliliters. This addresses standard 5MDC.5, relate volume to the operations of multiplication and division and solve word problems involving volume, and is called out specifically within the unit overview.	
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 including teacher background knowledge, information on the 5E teaching framework, teacher preparation notes, and guidance to address student misconceptions. In the "Structures and Properties of Matter" unit, teachers are given background information about chemical changes such as paper burning, vinegar and baking soda and, iodine and potatoes prior to teaching the lesson (page 151). This information helps teachers guide students during the investigation.	

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			In the “Matter and Energy in Ecosystems” unit, pages 60-61 gives two pages of teacher background information about food chains, producers, owl pellets and other background information needed to teach the lesson. In the “Matter and Energy in Ecosystems” unit, Lesson 3, a digital tip to address multiple opportunities is provided. In Lesson 3, the teacher is asked to facilitate a class discussion about food webs and draw comparisons between the habitats. The digital tip provided to help prepare students for the next investigation says to share the “Energy Cycles” simulation with the class and challenge students to think about how energy cycles through an ecosystem.	
	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 are given to support diverse learners and ensure that all students master the content. A “Differentiation Strategies” section is included at the beginning of each unit (page xiv). Here teachers can find suggested strategies and resources for differentiation of instruction. A scaffolding chart is additionally provided in each unit to help teachers gauge each student's achievement level (page xxii-xxiii). Finally, content specific strategies are called out in the margins of the “Teacher’s Manuals” (page numbers vary).	

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			In the “Energy in Ecosystems” unit, Lesson 2 (pages 60-6), teachers are given an entire page of background information about the topic being taught. This can be found within each of the lessons. “Structure and Properties of Matter,” Lesson 4, “Differentiation Strategy” (page 122), “Investigation B,” the teacher is asked to review a chart, explaining that students investigated solubility then defining solubility as well as solute and solvent. The suggested differentiation strategy on page 124 challenges students to consider how the amount of each material will affect the ability to create a solution. Examples are provided—a large sugar cube will not dissolve in water as quickly as a packet of sugar crystals and if a small amount of water is added to a large amount of salt, only a small amount of salt will dissolve.	
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**	Student text, laboratory sheets, and other scientific materials are readily available through vendor packaging. Students may access student readers and interactive readers online through the vendor portal. Student laboratory sheets, investigation sheets, and literacy articles are available in PDF format and online through the vendor portal. Aside from the literacy reader and literacy articles, teachers may choose to find (or,	

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			depending on grade level, ask students to find) a reading or current event article to use as an extension literacy activity. A guide for finding grade-level appropriate articles and a student report template are included in "Appendix B" of the Teacher's Guide. The Structure and Properties of Matter unit includes a student reader that is also available in a Spanish version. The reader includes sections such as matter, states of matter, hardness, mixtures and solutions and engineering practices, careers, and a glossary. On page 15 of the student reader information is given about chemical change along with a photograph of a rusting car and fireworks. In the "Earth and Space Systems" unit, page xxi, a description is given about each of the digital components offered in the unit along with information to access the digital components. Student "Investigation Sheets" that correlate with each lesson/investigation are found after each lesson. Page xxx and xxxi list out all of the materials needed and the lessons that the materials should be used in a table. This is true for each of the units.	
	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	

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			laboratory safety guidelines are embedded in the curriculum. The “Matter and Energy in Ecosystems” unit (page xviii) provides a safety contract for teachers and students to review before beginning the unit. Lesson 2 (page 60) provides a “Teacher Prep” that gives teachers safety guidelines, procedures, and equipment for the lesson. General safety guidelines, such as tie long hair back and tuck in loose clothing, can be found on page XVii. Specific safety procedure are also called out within lessons as needed. For example, in the “Structure and Properties of Matter” unit a safety note is given (page 140) to remind students to use a plastic bag around the magnetic wand when using the iron filings so that the magnet can be removed and the bag turned inside out. A safety data sheet on iron filings can also be located online.	
	7c) The total amount of content is **viable** for a school year.	**No**	The total amount of content is not viable for the school year. The instructional materials contain 3 units. The Structure and "Properties of Matter" and "Matter and Energy In Ecosystems" units include 6 lessons each, and the "Earth and Space" unit includes 5 lessons. The content provided through these 17 lessons is inadequate to provide robust science instruction that involves students in doing science for the full length of the school year.	BBS 3D is designed as a complete science curriculum for the entire school year. It is important to note that each lesson consists of multiple hands-on investigations and those investigations may take more than one day to complete. Submitted is a detailed pacing guide that better reflects the time required to teach BBS 3D. Please note that the Summary page on the document lists the total available instructional days. Feedback from

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			The “180-Day Instructional Pacing Guide” provides guidance on pacing of content by indicating what should be taught each day. To expand the 17 lessons across the school year, the pacing guide devotes approximately half of the total daily science experiences to the extension activities, digital simulations, “Tell Me More” responses, and literacy articles. For example, in the “Structure and Properties of Matter” unit, there are a total of 14 days devoted to “Tell Me More” questions such as Lesson 1, “Investigation C” question, “All matter is made up of particles that are too small to be seen. Think of ice, water, and water vapor. Are these composed of different particles?” This does not provide enough material to be considered a lesson. A full day’s science instruction is an excessive amount of time to allot for such components, which are supplemental in nature and designed to be used at the teacher’s discretion. There is not enough material to provide an academic year of quality science instruction for students. This is a missed opportunity to provide additional student learning experiences that support mastery of the performance expectations of the grade level.	teachers in Louisiana as well as across the nation confirms the instructional days are accurate. This pacing guide takes into account the resources that are found both in the Teacher's Guide and the online component. The pacing guide incorporates Questioning Strategies, Literacy Expository Text, Vocabulary Strategies, Connection of Driving Questions to the Lesson, Cross Curricular Instruction, and Real World Application. In addition, the pacing guide does not consider testing days or interruptions to regularly scheduled instruction time that may occur during the school year. This program is in classes throughout the US and teachers have found this to be a robust program with no need to supplement. By implementing the pacing guide and related strategies, students will have opportunities for reinforcement, remediation and application of the standards.

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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 assessment opportunities exist within each lesson as students conduct investigations, respond to investigation questions, and respond to "Tell Me More Questions". Students are assessed at the end of each unit using a summative assessment that addresses all of the standards with the unit. In the "Matter and Energy in Ecosystems" unit, students are formatively assessed throughout the unit in each investigation in the form of "Student Investigation" sheets. At the end of this unit and each unit, a summative assessment is provided to assess the students. In Lesson 6, students complete a performance task as a culminating activity to wrap up the entire unit. In "Structure and Properties of Matter," Lesson 1 (page 48) instructs to use students' responses to the "Tell Me More" question to determine if they can measure volume and recognize that water displacement is a measure of volume. Students are summatively assessed using a summative assessment and culminating task at the end of each unit. The "Earth and Space Systems" unit includes a summative assessment with fifteen questions (multiple choice, short answer,	

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			written response) that encompasses all of the standards within the unit. Lesson 5 includes a culminating task (pages 180-184) in which students research activities that have effects on the environment and create a public service announcement about the ways this event changes the local habitat.	
	REQUIRED **8b)** Assessment items and tasks are structured on integration of the **three-dimensions**.	Yes	Assessment items and tasks are structured on integration of three dimensions. Students are asked to use DCI, Cross Cutting Concepts and SEP to answer questions and complete tasks. The "Matter and Energy in Ecosystems" unit summative assessment addresses the three dimensions of the unit standards. Item 7 addresses 5-ESS2-1. Students are asked to list and describe how water from a lake creates a pond on a mountainside (CCC, Systems and System Models). Students must apply knowledge of the water cycle through interaction of Earth's materials and systems (DCI UE.ESS2A.b) In the "Structure and Properties of Matter" unit, number 14 on the summative assessment is structured on an integration of the three dimensions The question calls for students to "Analyze and Interpret Data" (SEP) from a table to determine which substance(s) and temperature will most likely cause ice cream to form the fastest (CCC Cause and Effect, DCI UE.PS1B.a).	

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	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. Scoring guidelines are included with each student investigation sheet and summative assessment. In the "Earth and Space Systems" unit, Lesson 3 asks students to investigate changes in daylight and the appearance of the moon. "Student Investigation, Sheet 3A2" asks students to graph the amount of daylight which directly correlates to standard 5-ESS1-2, represent data to reveal patterns of daily changes in length and direction of shadows...stars in the sky. "Matter and Energy in Ecosystems Literacy Article 4A, Every Member Counts," includes expected student responses to questions posed as well as items to be included in student claims, evidence, and reasoning "Structure and Properties of Matter Science" in the "News Credibility Rubric" that includes author, source/publisher, update frequency, opinion/bias, science impact, and an area for the student to explain whether they feel the article is credible or not. A general rubric is provided to assess students' performance throughout the unit, and a more specific rubric is included at the end of each unit that gives detailed	

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			observable criteria related to the culminating project.	
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**	Students have multiple opportunities throughout each unit to develop an understanding and demonstrate application of the three dimensions. SEP, CCC and DCI are taught when need but most often integrated to deepen student understanding.	
	2. Phenomenon-Based Instruction	**Yes**	Although improvement is needed, a majority of the time, observing and explaining phenomena and designing solutions provide the purpose and opportunity for students to engage in learning. Investigative phenomenon at the lesson level are used to engage students and drive learning for the lesson. Investigative phenomena are related across the unit but could be improved by linking to a larger overarching anchor phenomena.	
	3. Alignment & Accuracy	**Yes**	100% (13 out of 13) of the "Louisiana Student Standards" for grade 5 are incorporated to the full depth of the standard including accurate and up to date scientific information.	
	4. Disciplinary Literacy	**Yes**	Materials engage students in speaking and writing about scientific phenomena	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			incorporating vocabulary as needed. Students are asked to execute various tasks including creating models and making claims.	
II: Additional Indicators of Quality	5. Learning Progressions	**No**	The instructional materials do not provide a sufficient amount of instructional opportunities for engaging students in robust three-dimensional science instruction over the progression of a full school year.	Designed for flexibility, BBS 3D is a complete science curriculum providing instructional resources for a full school year. Grade 5 has 208 available instructional days.
	6. Scaffolding and Support	**Yes**	There are separate teacher support materials which build teacher knowledge and assist them in providing students with robust, varied learning opportunities to deepen conceptual understanding and develop scientific thinking.	
	7. Usability	**Yes**	Text sets, laboratory, and other scientific materials are readily accessible both digitally and through vendor packaging. The laboratory kits are outlined in the unit overview and can be purchased from the company. Each unit includes strategies for establishing safety procedures in the classroom or science lab. However, additional materials and learning opportunities should be included to make the program viable for a school year.	
	8. Assessment	**Yes**	Multiple types of formative and summative assessments are embedded in the instructional units. The assessments include items and tasks designed to measure student mastery of learning targets across the three dimensions.	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
FINAL DECISION FOR THIS MATERIAL: **Tier II, Approaching quality**				

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, Desoto, East Baton Rouge, Einstein Charter Schools, Iberia, InspireNOLA, Jefferson, Lafayette, Lincoln, Livingston, Orleans, Ouachita, Rapides, Recovery School District, RSD - Choice Foundation, RSD – FirstLine, RSD – NOCP, St. Charles, St. James, St. Mary, St. Tammany, Tangipahoa, Vermilion, West Baton Rouge, Zachary. This review represents the work of current classroom teachers with experience in grades K-5.

Appendix II.

Public Comments

There were no public comments submitted.