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: **Activate Learning Prime Science** Grade/Course: **4**

Publisher: **Activate Learning** Copyright: **2020**

Overall Rating: **Tier III, Not representing quality**

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

STRONG	WEAK
1. Three-dimensional Learning (Non-negotiable)	2. Phenomenon-Based Instruction (Non-negotiable)

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

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

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

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

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

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

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
Section I: Non-negotiable Criteria of Superior Quality **Materials must meet Non-negotiable Criteria 1 and 2 for the review to continue to Non-negotiable Criteria 3 and 4. Materials must meet all of the Non-negotiable Criteria 1-4 in order for the review to continue to Section II.**			
Non-negotiable **1. THREE-DIMENSIONAL LEARNING:** Students have multiple opportunities throughout each unit to develop an understanding and demonstrate application of the three dimensions. ☒ Yes ☐ No	**Required** **1a)** Materials are designed so that students develop scientific content knowledge and scientific skills through **interacting with the three dimensions** of the science standards. The majority of the materials teach the science and engineering practices (SEP), crosscutting concepts (CCC) and disciplinary core ideas (DCI) separately when necessary but they are most often integrated to support deeper learning.	**Yes**	The instructional 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 Effects of Weathering and Erosion Cluster of the Earth Science Geosphere Unit, students progress through a cluster of lessons designed to show that water, ice, and gravity break rocks into smaller pieces and move them around (DCI, UE.ESS2A.a). In the Glaciers Change Landscapes lesson, Session 1, students carry out an investigation (SEP, Planning and Carrying Out Investigations) to observe "what happens to the surface of the Earth when glaciers move over it." In the lesson, students model how glaciers erode and abrade landscapes using ice to represent a glacier and clay to represent the earth (SEP, Developing and Using Models). During the investigation, students describe the effects on clay when they move the ice with and without sediment across the surface of the clay. Students

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			focus on Cause and Effect (CCC) as they explain what causes the effects on the clay. Students then write about the cause and effect relationships in their science notebooks by answering the following questions: “Describe the effects on the clay when you moved the ice with sediment across its surface.”; “What caused these effects?”; “Describe the effects on the clay when you moved the ice without sediment across its surface.”; and “What caused those effects?” In the following session, Session 2, students observe and record how their melted glaciers deposited rocks and sediment and then explain how the landscapes were created. In the Physical Science Waves Unit, students learn about wave behaviors. In the Wave Behavior lesson, students use a human wave as a model (SEP, Developing and Using Models) to introduce the idea that waves can move across a surface causing the water to go in an up and down motion in place, but not in the direction of the wave (DCI, UE.PS4A.a). This builds upon the Patterns (CCC) observed in the prior lesson (What Are Waves) where students observed patterns made by waves in water. Students also discuss how energy is transferred through a wave and that waves can cause objects to move (CCC, Energy and Matter). Additionally, students discuss the wave source, wave medium, and motion of the wave.

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			Students then use a rope to produce waves (SEP, Developing and Using Models) to further explore the motion used to produce waves, the source of the waves, and how the waves travel. In the Life Science Structures in Living Things Unit, Lesson, "Observing Plant Structure," students engage in making scientific drawings as they carefully observe various plants, denoting similarities and differences in systems and structures (CCC, Systems and System Models). They describe the plant, think about the functions of the structures, and ask questions (SEP, Planning and Carrying out Investigations). They consider the ways these structures work together in systems to help the plant survive, grow, or reproduce (DCI, UE.LS1A.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.	**No**	Observing and explaining phenomena and designing solutions does not provide the purpose and opportunity for students to engage in learning a majority of the time. Throughout the units, phenomena are not present in the majority of the lessons, as most of the lessons do not introduce students to a case, a puzzling event, or a wonderment with relevant data, images, or text to elicit observations or questions. Throughout the materials, students do not observe phenomena to serve as catalysts to spark questions and define problems in order to drive their learning in an effort to work towards a solution the majority of the time. According to

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			guidance provided by the materials, "Anchoring Phenomena in PRIME are addressed via Driving Questions (DQs) for each unit." The Driving Question for each unit can be found in the Cluster Reference Overview section along with guidance on maintaining a Driving Question Board (DQB) that includes suggestions on possible artifacts to add to the DQB. The units' Driving Questions do not provide students the opportunity to utilize observable events to ask questions and define problems and engage in sense-making to drive their learning. The questions also often lack the complexity to meet the criteria of phenomena-based learning since they could be answered without deep investigation by students throughout the course of the unit. Additionally, although the Driving Question Board is used to help focus student attention to what they have learned, it is not grounded in student generated questions in order to drive learning throughout the unit. As stated in the Cluster Reference Overview, "Although the teacher maintains the DQB, because it functions as a shared space to represent learning, students might also contribute regularly to the display." The Driving Question board is used for artifacts to represent learning but not for additional questions generated by students, and students may or may not contribute to the board. For example, in

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			the Life Science Structures in Living Things Unit, Cluster Reference Overview, the Driving Question of the unit is, “How do an organism’s parts help it survive, grow, and reproduce?” While this Driving Question is addressed throughout the unit, evidence could not be found where students are required to ask questions or define problems associated with the Driving Question. Additionally, the Driving Question is not an observable case, something that is puzzling, or a wonderment. Although the teacher is provided guidance for possible artifacts to add to the board for each lesson, student inquiry does not drive the lesson as they do not have the opportunity to develop new questions while trying to make sense of a phenomenon. In the Physical Science Unit Energy Transfers, students are provided the Driving Question, “What types of energy are all around us in our everyday lives?” to serve as an anchoring phenomenon. The lesson begins with a discussion about energy followed by an activity in which students paste images on a board in two categories, “Energy in Action” and “Stored Energy.” Although the students work towards answering the Driving Question through the unit, they are not provided the opportunity to observe and explain phenomena to drive their learning nor is the learning grounded in student generated questions. Students are not incrementally explaining

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			a phenomenon as a purpose for their learning. This similar format is evidenced in the majority of the units. Overall, the Driving Question for each unit does not provide the opportunity for students to engage in utilizing observable events to ask questions and explain phenomena to drive their learning. Additionally, the questions often lack the complexity to require students to deeply investigate in order to be able to explain them.
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**.	**Not Evaluated**	This section was not evaluated because the non-negotiable criteria were not met.
	Required **3b)** Science content is **accurate**, reflecting the most current and widely accepted explanations.	**Not Evaluated**	This section was not evaluated because the non-negotiable criteria were not met.
	3c) In any one grade or course, instructional materials spend **minimal time on content outside** of the course, grade, or grade-band.	**Not Evaluated**	This section was not evaluated because the non-negotiable criteria were not met.
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.	**Not Evaluated**	This section was not evaluated because the non-negotiable criteria were not met.

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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.	**Not Evaluated**	This section was not evaluated because the non-negotiable criteria were not met.
	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.	**Not Evaluated**	This section was not evaluated because the non-negotiable criteria were not met.
	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.	**Not Evaluated**	This section was not evaluated because the non-negotiable criteria were not met.
Section II: Additional Criteria of Superior Quality			
5. LEARNING PROGRESSIONS: The materials adequately address Appendix A: Learning Progressions. They are coherent and provide natural connections to other performance expectations including science and engineering practices, crosscutting concepts, and disciplinary core ideas; the content complements the the Louisiana Student Standards for Math.	**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.	**Not Evaluated**	This section was not evaluated because the non-negotiable criteria were not met.
	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.	**Not Evaluated**	This section was not evaluated because the non-negotiable criteria were not met.

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☐ Yes ☐ No	Preferably, **math connections** are made explicit through clear references to the math standards, specifically in teacher materials.		
6. SCAFFOLDING AND SUPPORT: Materials provide teachers with guidance to build their own knowledge and to give all students extensive opportunities and support to explore key concepts using multiple, varied experiences to build scientific thinking. ☐ Yes ☐ No	**Required** **6a)** There are separate **teacher support** materials including: scientific background knowledge, support in three-dimensional learning, learning progressions, common student misconceptions and suggestions to address them, guidance targeting speaking and writing in the science classroom (e.g. conversation guides, sample scripts, rubrics, exemplar student responses).	**Not Evaluated**	This section was not evaluated because the non-negotiable criteria were not met.
	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.).	**Not Evaluated**	This section was not evaluated because the non-negotiable criteria were not met.
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.	**Not Evaluated**	This section was not evaluated because the non-negotiable criteria were not met.
	Required **7b)** Materials help students build an understanding of standard operating procedures in a science laboratory and include **safety** guidelines, procedures, and equipment. Science classroom and laboratory safety guidelines are embedded in the curriculum.	**Not Evaluated**	This section was not evaluated because the non-negotiable criteria were not met.
	7c) The total amount of content is **viable** for a school year.	**Not Evaluated**	This section was not evaluated because the non-negotiable criteria were not met.

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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.	**Not Evaluated**	This section was not evaluated because the non-negotiable criteria were not met.
	Required **8b) Assessment** items and tasks are structured on integration of the **three-dimensions**.	**Not Evaluated**	This section was not evaluated because the non-negotiable criteria were not met.
	8c) Scoring guidelines and rubrics **align** to performance expectations, and incorporate criteria that are specific, observable, and measurable.	**Not Evaluated**	This section was not evaluated because the non-negotiable criteria were not met.

FINAL EVALUATION

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

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

Section	Criteria	Yes/No	Final Justification/Comments
I: Non-negotiable Criteria of Superior Quality[2]	1. Three-dimensional Learning	**Yes**	The instructional 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.
	2. Phenomenon-Based Instruction	**No**	Observing and explaining phenomena and designing solutions does not provide the purpose and opportunity for students to engage in learning a majority of the time.

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

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	3. Alignment & Accuracy	**Not Evaluated**	This section was not evaluated because the non-negotiable criteria were not met.
	4. Disciplinary Literacy	**Not Evaluated**	This section was not evaluated because the non-negotiable criteria were not met.
II: Additional Criteria of Superior Quality[3]	5. Learning Progressions	**Not Evaluated**	This section was not evaluated because the non-negotiable criteria were not met.
	6. Scaffolding and Support	**Not Evaluated**	This section was not evaluated because the non-negotiable criteria were not met.
	7. Usability	**Not Evaluated**	This section was not evaluated because the non-negotiable criteria were not met.
	8. Assessment	**Not Evaluated**	This section was not evaluated because the non-negotiable criteria were not met.
FINAL DECISION FOR THIS MATERIAL: **Tier III, Not representing quality**			

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

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

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

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

The 2020-2021 Teacher Leader Advisors are selected from across the state and represent the following parishes and school systems: Acadia, Ascension, Beauregard, Bossier, Caddo, Calcasieu, City of Monroe, Claiborne, Diocese of Alexandria, East Baton Rouge, Evangeline, Firstline Schools, Iberia, Iberville, Jefferson, Jefferson Davis, Jefferson Parish Charter, KIPP, Lafayette, Lafourche, Lincoln, Livingston, Louisiana Tech University, Louisiana Virtual Charter Academy, Lusher Charter School, Natchitoches, Orleans, Ouachita, Plaquemines, Pointe Coupee, Rapides, Richland, Special School District, St. Charles, St. Landry, St. Tammany, Tangipahoa, Tensas, Vermillion, Vernon, West Feliciana, and Zachary Community. This review represents the work of current classroom teachers with experience in grades K-5.

Appendix I.

Publisher Response

The publisher had no response.

Appendix II.

Public Comments

There were no public comments submitted.