LOUISIANA DEPARTMENT OF EDUCATION

Office of Teaching and Learning

Science High Quality Instructional Materials Implementation Evidence Tool

Purpose:

This tool is intended to support science leaders in collecting evidence and providing feedback on science curriculum implementation. While data suggests that over 90% of Louisiana public schools have adopted and purchased high-quality science materials, survey data suggests that only 41% of science teachers are using the curriculum for more than 75% of instructional time[1].

The implementation elements included in this tool identify key practices that support students in making sense of scientific phenomena and engaging in grade-level science learning. Each element contains science-specific look-fors to help leaders identify strengths and opportunities for growth. The examples provided are not exhaustive, and leaders should use their professional judgment and knowledge of the lesson, unit, and curriculum when collecting evidence. Not all elements will be observable during a single classroom visit. Leaders are encouraged to focus on one or two implementation elements aligned to the purpose of the learning walks. A glossary is included at the end of this document to support understanding of science-specific terminology and instructional practices.

How to Use This Tool:

This tool is intended to be used by school leaders, instructional coaches, and system personnel to support high-quality curriculum implementation and inform professional learning to improve student outcomes in science. Before using this tool, ensure teachers have received initial professional learning on the chosen high-quality science instructional materials (HQIM) and have had at least one year of experience using the materials. All physical and digital resources to implement the materials as intended should be present in classrooms. For questions regarding materials needs, contact STEM@la.gov.

Leaders should collect objective evidence aligned with the selected element(s) and use the evidence to identify strengths and trends in curriculum implementation and potential next steps for implementation support. Evidence may include teacher actions, student actions, classroom artifacts, instructional materials, and examples of student thinking. Leaders are encouraged to discuss collected evidence to identify future needs for teacher collaboration and professional learning. For more information on analyzing high-quality curriculum implementation, see the LDOE Curriculum Implementation Continuum.

Printing Considerations:

For classroom use, leaders may print only the Evidence Tool pages. The Glossary is intended as an additional resource and may be accessed digitally.

[1]2025 RAND American Instructional Resources Survey (AIRS) Project

Implementation Elements

Teacher _____ **Grade** _____ **Date/Time** _____ **School/System**_____ **Unit/Lesson:**_____

Implementation Element	Examples of Observable Evidence	Evidence
Phenomenon-Based Instruction Students are investigating questions related to the anchor phenomena and can make connections between lesson activities and the questions they are trying to answer.	• Students are figuring out something observable and puzzling (phenomena). • The lesson question connects to the anchoring phenomena. • Students reference phenomena regularly. • Students make connections between phenomena and previous learning or life experiences.	
Suggested Discussion Questions: • What question are students investigating about the phenomena in this lesson? • How will students make connections between previous learning, life experiences, and the lesson's objective? • How will students make connections between the investigation question and the anchoring phenomenon?		
Scientific Sensemaking The instruction includes some or all of the following: • use of phenomena, data sets, models, and investigations; • explicit modeling of how scientists think, reason, and revise ideas; • visual aids and scaffolds that support students in engaging in science and engineering practices; • authentic scientific sources and evidence; and • content-specific vocabulary in context.	• Students reference visuals, examples, and models via High-Quality Instructional Materials (HQIM) and a science wall. • Students are engaged in the work of scientists* (investigating, sensemaking, critiquing). • Student thinking is made public (chart/board/share out).	
Suggested Discussion Questions: • What teacher moves are crucial to supporting sensemaking in this lesson? • How will you leverage the science and engineering practices and/or crosscutting concepts in this lesson?		
Coherent Design The lesson follows the coherent design of the HQIM, which may also include intentional decisions made by the teacher to meet unique student needs.	• Students have opportunities to develop, discuss, and revise models throughout the lesson. • Students understand and engage in established classroom routines. • Lesson activities are coherent and aligned to the focus of the learning. • Students have opportunities to make their thinking public, ask questions, and build on one another's ideas. • Students spend the majority of instructional time actively engaging in sensemaking rather than passively receiving information.	

	• Students are aware of time expectations and transitions during the lesson.	
Suggested Discussion Questions: • How did you determine the pacing of each part of the lesson to ensure students meet the goal (purpose) of the lesson? • How does the structure of this lesson support students in making sense of the science ideas? • How will students have opportunities to reflect on their learning orally or in writing?		
Three-Dimensional Learning The lesson leverages HQIM design to cultivate student ownership and includes opportunities for students to demonstrate reasoning, understanding, and growth throughout instruction.	• Students use high-quality materials (i.e., curriculum slides, workbooks, data). • Students gather or analyze evidence. • Students talk to each other about ideas. • Students have all necessary materials for hands-on activities. • Students reflect on their progress toward mastery of the objective. • Students can articulate how lesson components connect to the lesson objective. • Students are engaged in tasks that facilitate thinking and interaction. • Students learn with and from one another in collaborative group activities.	
Suggested Discussion Questions: • How do the lesson components (activities and materials) support students in achieving the lesson objective? • How will students use materials to gather or analyze evidence? • How will students interact with one another to discuss ideas and build understanding? • How will students reflect on their progress toward the objective during the activity?		
Student-Centered Learning Exemplar questions and sample look-fors from HQIM are utilized, providing opportunities for all students to think, respond, and contribute, and leading to further investigation and/or self-directed learning.	• Students respond to a variety of questions (from designated HQIM and teacher-generated questions). • Students ask questions and generate ideas for further learning during lesson activities. • Students respond authentically to each other's ideas (agree, disagree, clarify, ask follow-up questions). • Participation is distributed (not always the same voices). • Teachers circulate to listen and probe thinking. • Student responses shape the discussion.	
Suggested Discussion Questions: • How will your questions guide students in making sense of the phenomenon? • What look-fors are students expected to notice, and how will your questions help surface those ideas? • How will you use HQIM sample questions to support student thinking? • How will your questions help students analyze evidence and explain their reasoning? • How will students have opportunities to generate their own questions about the phenomenon?		

Connections to the Louisiana Student Standards for Science The teacher shows evidence of how the Louisiana Student Standards for Science are developed within their curriculum through thoughtful planning and purposeful instructional moves.	• The teacher connects the lesson objective to the anchoring phenomenon. • The teacher accurately explains scientific concepts and addresses competing ideas. • The teacher uses science and engineering practices to support student sensemaking. • The teacher highlights key scientific ideas and connects them to other concepts in the unit. • The teacher supports students in making claims using evidence and reasoning. • The teacher uses HQIM and investigations effectively to support learning. • The teacher highlights crosscutting concepts to help students connect scientific ideas and explain the phenomenon.	
Suggested Discussion Questions: • What key scientific ideas will students understand in this lesson, and how will you highlight them during instruction? • How does this lesson help students connect the phenomenon to broader scientific concepts in the unit? • What competing ideas might students have about this concept, and how will you address them? • How will you help students apply crosscutting concepts to explain the science ideas in this lesson? • How will you use the HQIM (investigations, models, data) to support student understanding?		
Evidence of Student Sensemaking Students are actively engaged in science sensemaking, regularly practicing multiple ways of thinking and problem-solving like scientists and engineers.	Students engage in Science and Engineering Practices to make sense of phenomena and solve problems by • analyzing evidence; constructing, critiquing, and revising explanations, models, or solutions; and using evidence and reasoning to support claims; and • identifying patterns, cause-and-effect relationships, and other crosscutting concepts to deepen understanding and refine their thinking.	
Suggested Discussion Questions: • How will students use evidence to construct explanations for the phenomenon? • How will students analyze patterns or relationships in the data? • How will students revise their thinking or models as new evidence emerges? • How will students defend or critique ideas using evidence and reasoning? • How will students connect scientific ideas and evidence to explain the phenomenon?		

Strength:

Area for Growth:

Key Term	Definition
Phenomena	An observable event or occurrence that can be explained through science.
Anchoring Phenomena	A meaningful observable event or question that drives student learning and sensemaking throughout a lesson or unit.
Scientific Sensemaking	The process of students actively using evidence, models, existing and emerging scientific ideas, and discussion to develop and refine explanations.
Modeling	The use of diagrams, representations, simulations, or explanations to represent and explain scientific ideas or phenomena.
Three-Dimensional Learning	Instruction that integrates disciplinary core ideas (DCIs), science and engineering practices (SEPs), and crosscutting concepts (CCCs).
Competing Ideas	Different explanations, claims, or understandings students may have about a scientific concept or phenomenon. Formerly referenced as misconceptions.
Listen-fors	Specific evidence of student thinking, reasoning, or understanding that teachers intentionally monitor for during instruction and discussion.
Work of Scientists	The practices scientists use to investigate questions and make sense of the natural world. Examples include: analyzing data, developing models, constructing explanations, engaging in argument from evidence, and revising ideas based on evidence.