Criteria 1: Authentic Learning Experiences through the use of relevant phenomena

Students will engage in science in an authentic manner through the use of relevant phenomena.

Expanding Implementation	Implementation	Beginning Implementation	No Implementation
• Students directly experience phenomena and have teacher support to build understanding across three dimensions • Phenomena connected to identity/interests; students make connections with peers • Figuring out of DCIs across domains • Evidence building occurs across activities and investigations	• Students provided with direct experience with phenomena but lack of teacher support to build understanding across three dimensions • Phenomena loosely connected to identity; teacher helps make connections • Figuring out of DCIs focused in one domain • Engage in practices to gather evidence about explanation of phenomena	• Phenomena used only as a hook • Authentic learning happens by chance • Read about phenomena with no application • Lab investigations present but mainly as confirmation	• Isolated topic-based lessons • Reading about science topics • Content is disconnected from student interests or identities • Absence of science investigations • Primarily reading and answering worksheet questions
			

Learning Walk Tool; Adapted from the work of M. Sanderman, P. Christensen, K. Kilibarda

Criteria 2: Three-dimensional learning

Students will use SEPs to build their understanding and apply their learning across disciplines to understand the relevance of concepts.

Expanding Implementation	Implementation	Beginning Implementation	No Implementation
• Framing of learning with CCCs is clear and students connect CCCs to more than one science discipline • Students engage in grade level appropriate SEPs without teacher prompting • Integrated use of three dimensions at element level • Classroom assessments align to, look like, and are part of classroom instruction • Formative assessments are utilized by the teacher in making instructional decisions and students use peer and teacher feedback to revise or extend their explanations/models/arguments	• Framing of learning with CCCs is clear to teachers but not students • Use of SEPs is grade level appropriate but teacher directed • Integrated use of three dimensions in activities • Assessments integrated three dimensions but prioritize DCIs • Formative assessments identify student misconceptions and progress in more than one dimension with a plan to use data to drive instruction	• Framing of learning includes CCCs but with loose connections • SEPs present but not grade level appropriate • DCIs, CCCs, and SEPs present but not integrated • Two of three dimensions present in activity • Use of one- or two-dimensional assessments that are isolated from instruction • Additional assessments such as vocabulary quizzes are utilized during instruction, but the results are not used to inform instruction or learning. • Formative assessments focus only on DCIs or misconceptions without plan to use data	• Framing of learning is absent of cross-cutting concepts • Emphasis on scientific method or cookbook labs • Activities centered on facts; content is an end in itself • Assessments focused on recall of DCIs only • Absence of formative assessments

Criteria 3: Coherence

Students will build on concepts learned in prior years as well as building knowledge and skills throughout each unit.

Expanding Implementation	Implementation	Beginning Implementation	No Implementation
• Teacher plans with all three dimensions and actively connects learning to students lives • Unit features anchoring or lesson level phenomena that allow students to figure out different aspects of the natural event and connect current and prior learning • When asked, students can identify how what they are learning on a given day was related to previous learning and/or how it will guide future learning • Objectives are three-dimensional learning performances and are coordinated to build understanding within and across dimensions • Driving question(s) are developed by teacher and students and subsequent lesson-level questions build coherently to allow students to make sense of a phenomenon while building towards performance expectations	• Evidence that teacher is aware of all three dimensions • Teacher connects current learning to past concepts but bring in students' life experiences • Unit features anchoring or lesson level phenomena but students do not figure out different aspects of the natural event or do not need to tie current learning with prior learning • Unit is coherent on paper but students struggle to articulate connections between activities • Objectives are three-dimensional learning performances that are designed to build student understanding • Driving question(s) are developed by teacher and students but teacher selects which ones are investigated in a way that doesn't build conceptual understanding	• Students engage in science activities/laboratory experiences that relate to a big idea but students are not able to articulate that relationship • Unit organized conceptually around topics or themes but not phenomena • Objectives are one or two-dimensional and typically focus mastery of content or skills but are not all three dimensions • Driving question(s) are teacher selected and not complex enough to require building understanding over the course of several investigations	• Students engage in isolated lessons or investigations that are grouped together around a science topic or textbook chapter • Evidence that each unit repeats same foundational skills or knowledge • Learning organized by content, "cookbook labs" or activities that largely confirm learning about content • Objectives written as Performance Expectations, treated as singular items to be met in isolation

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Criteria 4: Appropriate integration of ELA/literacy and mathematics

While engaging in learning, students develop disciplinary literacy and mathematics practices in order to make sense of phenomena.

Expanding Implementation	Implementation	Beginning Implementation	No Implementation
• High frequency of student-student discourse that promotes sensemaking and uses appropriate disciplinary language/vocabulary • Students use journals/notebooks in ways that promote sensemaking and use self, peer or teacher feedback to revise their understanding • Students use mathematical modeling and graphing of data in ways which encourage conceptual understanding, vocabulary development, and mathematical or computational thinking • Students look to a variety of expert resources to provide evidence for their scientific claims, including resources that are not always identified by the teacher	• Discourse pattern is structured whole-class discussions and small group work in a way that allows students to negotiate understanding and/or to revise their explanations/models/arguments • Little to no use of disciplinary vocabulary present in discourse • Journals/notebooks are used to promote sensemaking but there is no opportunity for meaningful peer or teacher feedback • Students use scientific formulas, make calculations, and appropriately represent and analyze data to deepen their conceptual understanding • Student use a variety of teacher-provided high-quality text sources in meaningful ways	• Discourse pattern is structured whole-class discussions and small group work but conversations do not allows for negotiating understanding or providing peer feedback • Journals/notebooks are used to record and organize information and build on these ideas throughout their learning • Students use mathematical calculations, graph their data and make sense of various displays of data but their analysis does not advance conceptual understanding • Students utilize teacher-provided expert texts to answer questions	• Science vocabulary is presented as information/facts to be learned through disconnected practice or memorization • Discourse pattern is only student to teacher, focused on DCIs • Students record information on worksheets but don't return to this information • Focus on math calculations to determine correct answers. Graphing and other skills taught in isolation of context (i.e. there is a measurement and graphing unit) • Textbook is the predominate source of information to analyze or interpret data or to construct their scientific explanations