



EQiP Rubric for Science Unit Peer Review Panel Feedback

Overall Rating:

N

Not ready to review

Unit Name: How Does Light Help Me See Things and Communicate With Others?
Grade Level: 1

		Evidence of Quality?			
		None	Inadequate	Adequate	Extensive
Unit Criteria	A. Explaining Phenomena/Designing Solutions: Making sense of phenomena and/or designing solutions to a problem drive student learning.			X	
	B. Three Dimensions: Builds understanding of multiple grade-appropriate elements of the science and engineering practices (SEPs), disciplinary core ideas (DCIs), and crosscutting concepts (CCCs) <i>that are deliberately selected to aid student sense-making of phenomena and/or designing of solutions.</i>		X		
	i. <i>Provides opportunities to develop and use specific elements of the SEP(s).</i>			X	
	ii. <i>Provides opportunities to develop and use specific elements of the DCI(s).</i>			X	
	iii. <i>Provides opportunities to develop and use specific elements of the CCC(s).</i>		X		
	C. Integrating the Three Dimensions: Student sense-making of phenomena and/or designing of solutions requires student performances that integrate elements of the SEPs, CCCs, and DCIs.		X		
	D. Unit Coherence: Lessons fit together to target a set of performance expectations.			X	
	E. Multiple Science Domains: <i>When appropriate</i> , links are made across the science domains of life science, physical science and Earth and space science.		X		
F. Math and ELA: Provides grade-appropriate connection(s) to the Common Core State Standards in Mathematics and/or English Language Arts & Literacy in History/Social Studies, Science and Technical Subjects.		X			
Category I Rating: 1 Adequate evidence for some criteria in Category I, but inadequate/no evidence for at least one criterion A–C					
Criterion A.	<p>Specific evidence from materials and review team consensus reasoning:</p> <p>The unit begins with students exploring a shared phenomenon (some images are harder to see when the room is darker), which drives the investigations and engineering challenges that follow. Direct experience of phenomena include: Teacher’s Guide, Day 1, Lesson 1a – Students experience stations where they are able to observe pictures of shapes in well-lit and darker areas of the room, in Lesson 2 when students test materials that block light, in Lessons 4 and 5 when students look inside the model classroom when all light is blocked or when light is allowed in, in Lesson 8 when students observe shadows when light is blocked, and during the light and shadow hunt(s) in Lesson 10. There is some evidence that student questions drive some of this work (e.g., Teacher Guide pg. 9, “...help students turn some of their predictions into questions...”) but the extent to which students investigate their own questions is unclear. However, students do define the design challenge based on their school context (TG pg. 112). The communication and engineering lessons are directly linked to student experiences in the community and school. Thus, they have opportunities to drive the sense-making and problem-solving work in this unit.</p> <p>The lessons within the unit are oriented toward understanding a phenomenon or designing solutions to a problem. The Storyline document indicates, for each lesson, the phenomena that</p>				

	<p>students are making sense of or problems that they are designing solutions to. For example, in lesson 1 they experience the phenomenon that it is harder to see images in some place within the classroom; this phenomenon then motivates questioning and further investigation to be able to explain why they observed this pattern. Lessons 10-12 are focused on students designing solutions to problems. Students are supported to observe how lights are used for communication (beginning in Lesson 10) and then bring the idea of using lights to communicate into their school to solve the problem with a noisy hallway (Lesson 11). This is evidence that lessons are designed with the goal of student sense-making and solution design as the goal.</p> <p>Lesson 11 has an engineering focus and is integrated with 1-PS4-3 (including Lesson 11f, which is referred to as Lesson 12 in the Storyline; this is an optional extension lesson). Students use their understanding of how materials interact with light to develop a communication tool. This connection of core ideas to solving the problem is implicitly presented on Teacher Guide page 113, when the class discusses/charts “what we have figured out so far” and “how this helps our design.”</p>
	<p>Suggestions for improvement:</p> <p>The authors did a good job addressing this criterion. The rating could be improved by making more explicit the ways in which student questions and prior experiences drive the sense-making; currently, most of the questions are teacher-driven. For example, providing direction to the teacher on how to use student contributions to the Guiding Question Board to guide the investigations.</p> <p>We suggest that the authors allow for more opportunities for prior experiences to drive sense-making.</p> <p>Throughout the sequence of lessons, students began with or investigated with a direct experience. Then, during the Building Understanding Discussions, students weren’t always expected to return to all those experiences as evidence to make sense of the phenomena. We suggest that this be developed further.</p> <p>Additionally, Sometimes the lessons felt disconnected when students were expected to transfer their conceptual understanding to a new situation, for example with the cave. This may have been offered as another way to think about the same phenomena, but it may also be confusing for some at this grade level. We suggest the authors consider how to better support and scaffold students in their transfer of understanding.</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Criterion B.</p>	<p>Specific evidence from materials and review team consensus reasoning:</p> <p>Students have opportunities to develop and use SEPs in each lesson. Evidence of this can be found in the Teacher Guide; focal SEPs that students have opportunities to engage in during the lesson are also called out in the table at the start of each lesson in the Teacher Guide and in the Storyline document. Some examples are listed here.</p> <ul style="list-style-type: none"> • SEP 3 - Teacher Guide pg. 28: When students are asked to share ideas on how they can use the CD case and flashlight to determine how materials interact with light they have the opportunity to “plan ... an investigation collaboratively to produce data to serve as the basis for evidence to answer a question.” [note: they later conduct this investigation] • SEP 2 - Teacher Guide pg. 67-69: When students are asked to discuss how looking into a cave is like looking into their box, they have the opportunity to “distinguish between the model and the actual object ... the model represents.” [note: they later also develop a simple model].

This unit provides opportunities to construct explanations based on evidence, examples include Lesson 4 and 5 when students use the data from their investigation to conclude they need light to see objects.

Students have the opportunity to develop and use DCI PS4.B throughout the unit. They begin to develop this idea as they view the different stations in Lesson 1a. They continue to develop their understanding in Lesson 2, through their testing of various materials on the window. In Lesson 3, students develop this DCI further by testing the small-scale model. Students also have the opportunity to develop and use PS4.C. For example, see Teacher Guide pages 112 to 145: When students are asked to design a device to communicate across a distance without making noise, they have the opportunity to use what they have learned to develop the idea that “people use devices to send and receive information.” Students also have the opportunity to develop and use the ETS DCIs throughout Lesson 11.

In some lessons, students have the opportunity to use some of the CCCs. The CCC that comes up the most is Patterns. For example, students are asked to identify patterns (such as TG pgs. 4, 49, 77) but they are not explicitly asked to consider “that patterns ... can be observed, used to describe phenomena, and used as evidence.” Other CCCs that are identified include Scale, Proportion, and Quantity (TG pg. 38) and Cause and Effect (TG pg. 39 and 49), but similarly they are not developed beyond mentioning them. Structure and Function seems implicit in Lessons 10 and 11 but is not developed with the engineering challenge.

Suggestions for improvement:

SEPs

Opportunities for students to use evidence could be strengthened through synthesizing individual results into a class chart of data, which students could refer to when making claims. Students could also use their evidence to support their claims in writing (W.1.8). On pg. 41-42, there is an opportunity for a scaffolded Claim Evidence Reasoning for students to make a claim about light being necessary for us to see things. It is alluded to but not called out specifically in the lesson. In lesson 5, where this is continued, the authors could have students actually write the CER or at least do a Turn and Talk. There were also several missed opportunities to explicitly include SEP 2 when students are setting up and using the concrete room model for their investigations. For first graders, we think it would be helpful for them to explicitly discuss models with this concrete example prior to the more abstract use of modeling to discuss the cave scenario.

DCIs

The rating could be improved by making explicit reference to the DCIs in the Learning Plan, so that the teacher knows that this is an important idea related to the DCI when it comes up within the lesson.

CCCs

When calling out the CCCs, we suggest that the authors consult the element descriptor for the appropriate grade band. Additionally, explicit discussion of the CCCs in the Learning Plan would improve the rating. We also suggest that the authors provide explicit suggestions for how all students can develop and use the CCCs within the context of the lesson. For example, including discussion prompts to provide opportunities for students to discuss how patterns are part of the evidence they are using throughout the unit, and using Turn and Talks or writing prompts on the handouts so that all students have an opportunity to discuss the CCCs. In the Evidence Statements for 1-PS4-2 and 3, the CCC of Cause and Effect is explicitly used. However, in this unit, Patterns is highlighted more frequently. We suggest that Cause and Effect be highlighted

	<p>more within this unit. Lesson 8 presents an opportunity for a Cause and Effect connection (e.g., the material blocking the light and shape of the shadow, or the size of the shadow and the distance from the light source). Cause and Effect also could be included in Lessons 10 and 11, when students are considering what is communicated and how people respond. Structure and Function could be included in the Activity sheets in Lesson 11 or a class chart of how objects' shapes influence how they function (e.g., a flashlight is long and round so we can grasp it in our hands, which allows us to aim the light where we need to see.)</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Criterion C</p>	<p>Specific evidence from materials and review team consensus reasoning:</p> <p>There is some evidence of attempts to integrate the three dimensions. For example, in Lesson 1, students have the opportunity to use the patterns they observe in the stations (which they recorded and analyzed) in order to develop the idea that it is harder to see things in the dark. In Lesson 2a, students are asked to plan a test (SEP) to determine which materials block light the best (DCI) and are asked to find patterns in the data (CCC). However, it is unclear how important the CCCs are to these student performances. For example, in the Teacher Guide on page 71, students are asked to use evidence from their investigations to argue (SEPs) that we can't see things that are not illuminated (DCI). Students could include a pattern they identified as a part of their argument, but it's not explicitly called out in the TG. Similarly, in Lesson 11 (TG pg. 113) they discuss how what they've learned (DCIs) could inform their design (SEPs) but no CCCs are explicitly called out.</p>
	<p>Suggestions for improvement:</p> <p>We suggest that the authors be more explicit about how the CCCs contribute to the sense-making and design in this unit. For example, on page 113 of the Teacher Guide, there could be prompts for the teacher to include discussion of the patterns they saw in their evidence that lead them to these understandings. Additionally, they could be made more explicit for students, for example in the student handouts.</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Criterion D.</p>	<p>Specific evidence from materials and review team consensus reasoning:</p> <p>Lessons revisit questions from previous investigations and information/learning from one lesson is used to inform next steps. For example, Lesson 4 applies students' understandings and experiences from Lessons 1 and 2, see p.38 of the Teacher's Guide; lessons revisit charts built from information generated by students during Building Understanding Discussions, see Lesson 5 p. 40 referring to the "Our Shoeboxes Told Us" poster. Additionally, the connections between lessons are outlined in the first page of each lesson in the Teacher Guide in terms of "Previous Lesson ... Where we've been," "This Lesson... What we are doing now," and "Next Lesson...Where we're going" (e.g., TG pg. 63).</p> <p>The investigations go step by step in order to get students to the targeted understandings required by the PEs. For example, the evidence collected in Lessons 1 – 5 can all be used to meet 1-PS4-2. By the end of the unit, students have had many opportunities to develop proficiency in 1-PS4-2, 3, and 4. They use evidence from previous lessons as they work toward 1-PS4-4, though it is only first addressed in Lesson 11. Lesson 11f in the Teacher Guide (pg. 151; listed as Lesson 12 in the Storyline document) is listed as an optional extension. This is the only lesson that provides evidence that students have full opportunity to build toward full proficiency in 1-PS4-3 because it is the only time that reflective materials are explicitly addressed.</p>
	<p>Suggestions for improvement:</p> <p>This is an overall strength of the unit. Students are asked from lesson to lesson to remember and speak about what they learned and at the end of lessons students begin to wonder about or plan next steps. It might be nice to document their thinking in a small journal. Consistently record class questions from every lesson.</p>

	<p>K-2-ETS1-1 and K-2-ETS1-2 are also listed in the targeted set of performance expectations. To strengthen these, Lesson 11 may want to include attention in the Activity Sheets and feedback to the shape of the object that is designed and how it helps the function to solve the identified problem.</p> <p>We also suggest that the authors include more explicit discussion of reflective surfaces in the early lessons in the unit, when they are exploring how light interacts with different materials. Another option is to make the mirror extension (Lesson 11f or 12) not optional. If this extension is no longer optional, we suggest it be developed further to provide students with opportunities to develop some understanding of reflective surfaces prior to considering how they could adapt their devices to communicate around a corner.</p>
Criterion E.	<p>Specific evidence from materials and review team consensus reasoning:</p> <p>We found no evidence for cross-disciplinary connections.</p> <p>The CCC Patterns is used to discuss patterns in data within the lessons. On page 101, an anecdotal story about growth patterns is discussed in the Additional Guidance section, which could be related to life science.</p> <p>Suggestions for improvement:</p> <p>We think there is a missed opportunity to discuss the light from the sun more in depth. If interested, lessons 2 and lesson 8 could provide opportunities to make connections about the amount of daylight at different times of the year (1-ESS1-2).</p> <p>We also suggest that the authors consider making explicit connections to the CCCs in Lesson 11, when students are working through the engineering design challenge.</p>
Criterion F.	<p>Specific evidence from materials and review team consensus reasoning:</p> <p>The unit contains no explicit connections to CCSS-Math.</p> <p>Connections to the CCSS-ELA speaking and listening standards can be found at the end of every lesson. Within each lesson, there is evidence to support these connections in the opportunities provided to students to speak and listen (within any lesson, see the suggested prompts and anticipated student responses or the building understanding discussions).</p> <p>Suggestions for improvement:</p> <p>The connections to ELA standards are helpful, although somewhat hidden because they come at the end of the lesson. We suggest that the authors consider providing guidance to the teacher in the front matter and at point-of-us in each lesson on these connections. The authors could possibly even explicitly note when certain lessons or parts of lessons would be appropriate for implementation during ELA time in the daily schedule.</p> <p>We suggest that the authors consider making explicit connections to the CCSS-ELA writing standards, as well. This could be accomplished by offering more writing opportunities, such as creating a “How To” booklet or using sentence stems to make a claim and providing evidence for needing light to see.</p> <p>We think that the math standards are not as appropriate to include in this unit because the data aren’t quantitative. However, we suggest that the authors consider if there are any possible connections with the Standards for Mathematical Practice.</p>

Category II. NGSS Instructional Supports:

		Evidence of Quality?			
		None	Inadequate	Adequate	Extensive
Unit Criteria	A. Relevance and Authenticity: Engages students in authentic and meaningful scenarios that reflect the practice of science and engineering as experienced in the real world.				
	B. Student Ideas: Provides opportunities for students to express, clarify, justify, interpret, and represent their ideas and respond to peer and teacher feedback orally and/or in written form as appropriate.				
	C. Building Progressions: Identifies and builds on students' prior learning <u>in all three dimensions</u> , including providing support to teachers.				
	D. Scientific Accuracy: Uses scientifically accurate and grade-appropriate scientific information, phenomena, and representations to support students' three-dimensional learning.				
	E. Differentiated Instruction: Provides guidance for teachers to support differentiated instruction.				
	F. Teacher Support for Unit Coherence: Supports teachers in facilitating coherent student learning experiences over time.				
	G. Scaffolded differentiation over time: Provides supports to help students engage in the practices as needed and gradually adjusts supports over time so that students are increasingly responsible for making sense of phenomena and/or designing solutions to problems.				

Category II Rating: N/A

Criterion A.	<p>Specific evidence from materials and review team consensus reasoning:</p> <p>The phenomenon that engages students in Lesson 1 and sets the stage for the whole unit is viewing images with different amounts of illumination. Students experience the phenomenon and others throughout the unit first-hand, such as in Lesson 10 with the Light and Shadow Hunt. An example of experiencing phenomena through media representations is during Lesson 10 p. 103 in the Alternate Activity suggestion.</p> <p>Students have opportunities to connect instruction to home, neighborhood and community. Examples include:</p> <ul style="list-style-type: none"> • Lesson 4, p. 42 in the Additional Guidance box: students may bring an object from home to test in their box. • Lesson 8: students are asked to consider times they want to block out light. • Lesson 10: Light and Shadow Hunt occurs in their school and neighborhood. <p>Students have opportunities to ask and investigate questions that arise from experiencing the phenomenon first-hand and these investigations help them to explain the phenomenon. Students have the opportunity to guide the design problem.</p>
	<p>Suggestions for improvement:</p> <p>We are somewhat concerned that the examples on page 17 of the student materials might not be relevant to all students.</p> <p>We suggest that the authors consider providing an opportunity for students to ask questions and gather data about the noisy hallway problem they are trying to solve. We suggest they consider adding a way to ensure that this is a problem from their own experience, for example they can't hear their teacher because of the hallway noise or it's hard to read because other students are being loud.</p>

Criterion B.	<p>Specific evidence from materials and review team consensus reasoning:</p> <p>Students have opportunities in each lesson to express, clarify, justify, and represent their ideas; this is mostly done orally. These opportunities are explicitly laid out in the lesson plans. However, the only explicit evidence for opportunities for students to respond to peer and teacher feedback was found in Lesson 11. There are implicit opportunities for this in the discussions, but these are not clearly laid out or made explicit.</p>
	<p>Suggestions for improvement:</p> <p>Most opportunities for students to express ideas are oral. We suggest that the authors consider additional writing opportunities for students. This gives students independent practice and agency over ideas to share with the class. Adjust student handouts for more opportunities to write and reflect on their ideas.</p> <p>We also suggest that the authors provide more opportunities for Turn and Talks so that all students have an opportunity to speak. This could also allow for peer feedback.</p> <p>We suggest that the authors provide explicit guidance to the teacher on how and when to provide feedback that students can respond to, as well as providing guidance for facilitating students as they provide and respond to feedback from peers.</p>
	<p>Specific evidence from materials and review team consensus reasoning:</p> <p>Each lesson provides a “roadmap” that indicates what has been established in previous lessons, what will be established in this lesson, and what will come next. Each lesson also includes statements about what knowledge students are likely to bring with them, either from previous lessons or from previous grades. The information for the current lesson is clearly addressing all three dimensions, but the information about past and future lessons does not explicitly address all three. We found no evidence of how the prior learning will be built upon is observed.</p>
Criterion C.	<p>Suggestions for improvement:</p> <p>It would be helpful for the “roadmap” to explicitly address all three dimensions for the past and future learning, as well as the current lesson.</p> <p>It is also important to explicitly name prior learning and how it is built upon so the teacher can understand this unit’s progression.</p>
	<p>Specific evidence from materials and review team consensus reasoning:</p> <p>All scientific information, phenomena, and representations appear to be scientifically accurate and grade appropriate. The phenomena and representations should support students’ three-dimensional learning.</p>
Criterion D.	<p>Suggestions for improvement:</p>
	<p>Specific evidence from materials and review team consensus reasoning:</p> <p>Some lessons include margin notes about alternatives for students who are emergent readers or writers (e.g., TG pg. 158 and 159). Lessons include the use of symbols or simple illustrations in classroom charts, see p. 8 of Lesson 1 in the box titled Adding a Classroom Artifact where it suggests, “Add in drawings or icons to support emergent readers as needed” or the diagram on p. 20 of Lesson 2. There are no explicit notes for how to differentiate for English learners or students with special needs. Some notes that indicate they are about differentiation are actually more about management (e.g., first half of box on TG pg. 29).</p>
Criterion E:	<p>Specific evidence from materials and review team consensus reasoning:</p> <p>Some lessons include margin notes about alternatives for students who are emergent readers or writers (e.g., TG pg. 158 and 159). Lessons include the use of symbols or simple illustrations in classroom charts, see p. 8 of Lesson 1 in the box titled Adding a Classroom Artifact where it suggests, “Add in drawings or icons to support emergent readers as needed” or the diagram on p. 20 of Lesson 2. There are no explicit notes for how to differentiate for English learners or students with special needs. Some notes that indicate they are about differentiation are actually more about management (e.g., first half of box on TG pg. 29).</p>

	<p>Some lessons include notes about supports for students who are struggling (e.g., TG pages 32, 57, 59, 69, 76, 88, 109, and 102). Teacher modeling for most activities is present, so students don't have to follow written directions or remember oral directions.</p> <p>There is only one note about an extension (TG pg. 89).</p>
	<p>Suggestions for improvement:</p> <p>We suggest that the authors provide additional concrete differentiation suggestions for those areas in which there is no current evidence, including some differentiated student pages. For example, students would benefit from a word/object wall where vocabulary and/or frequently used words are posted and perhaps include the object with its label or a picture with the label when the object is not available.</p> <p>Additionally, providing additional extensions for students meeting or exceeding expectations would be useful.</p> <p>The authors might consider including a half sheet students could take home after each lesson that connects to that lesson. Just a small activity that includes family in the learning can extend or deepen understanding for students.</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Criterion F.</p>	<p>Specific evidence from materials and review team consensus reasoning:</p> <p>Strategies for linking lessons in this unit are included. Lessons regularly end with a discussion along the lines of, "Now that we know this, we have new questions to answer in the next lesson."</p> <p>The most common feature in this unit as a strategy for ensuring student sense making is the Building Understanding Discussions. Teachers have guidance about what to ask to elicit information and what responses might/should be heard but they are not explicitly linked to the three dimensions.</p> <p>Suggestions for improvement:</p> <p>The authors might consider including a way to formalize or record the anecdotal evidence from the discussions. A checklist could help ensure all students are developing sense-making of the phenomena and not only certain students. This would also provide some guidance about the progression of learning and what or how students might convey their thinking.</p> <p>We also suggest considering how to bring the CCCs more explicitly.</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Criterion G.</p>	<p>Specific evidence from materials and review team consensus reasoning:</p> <p>There are some descriptions of how supports for planning an investigation help students with this task, but not for how their needs might change over time.</p> <p>By the time they reach Lesson 11, it appears that students are expected to engage in the SEPs more independently and deeply. Students are eventually supported to take the best elements of each design to make the best design.</p> <p>Suggestions for improvement:</p> <p>We suggest more explicit guidance to the teacher on how expectations change over the course of the unit and how to foster more independence as students have more experience with the three dimensions.</p>

Category III. Monitoring NGSS Student Progress

		Evidence of Quality?			
		None	Inadequate	Adequate	Extensive
Unit Criteria	A. Monitoring 3D student performances: Elicits direct, observable evidence of three-dimensional learning; students are using practices with core ideas and crosscutting concepts to make sense of phenomena and/or to design solutions.				
	B. Formative: Embeds formative assessment processes throughout that evaluate student learning to inform instruction.				
	C. Scoring guidance: Includes aligned rubrics and scoring guidelines that provide guidance for interpreting student performance along the three dimensions to support teachers in (a) planning instruction and (b) providing ongoing feedback to students.				
	D. Unbiased tasks/items: Assesses student proficiency using methods, vocabulary, representations, and examples that are accessible and unbiased for all students.				
	E. Coherent Assessment system: Includes pre-, formative, summative, and self-assessment measures that assess three-dimensional learning.				
	F. Opportunity to learn: Provides multiple opportunities for students to demonstrate performance of practices connected with their understanding of disciplinary core ideas and crosscutting concepts and receive feedback				

Category III Rating: N/A

Criterion A.	Specific evidence from materials and review team consensus reasoning: Direct, observable evidence of learning includes classroom charts and lists, student sheets, class discussions, and students conducting the investigations.
	Suggestions for improvement: Monitoring student performance might be strengthened by providing more frequent writing opportunities for individual students.
Criterion B.	Specific evidence from materials and review team consensus reasoning: There are margin notes about formative assessment opportunities (e.g., TG pg. 59, Lesson 9 part 2 and TG pg. 71) but there are no suggestions of how teachers might use the data from these assessments to inform instruction.
	Suggestions for improvement: Students' discussion, performances during the investigation, activity sheets, response to feedback, and performance at the Museum Exhibit may provide opportunities to collect data to inform instruction or make accommodations for students who aren't meeting the benchmark expectations for the progressions of learning. We suggest that the authors consider formalizing these teacher observations through checklists, media representations, or a student notebook. Additionally, explicit guidance is needed on how to use the data from the identified formative assessments to inform instruction going forward.
Criterion C.	Specific evidence from materials and review team consensus reasoning: No evidence of scoring guidance.
	Suggestions for improvement: Rubrics are needed, particularly for the design challenge. Expected student responses during discussions are outlined in the Learning Plan and could be used to develop rubrics.

Criterion D.	Specific evidence from materials and review team consensus reasoning:
	Suggestions for improvement: More techniques should be included to increase participation by all students (e.g., turn and talk).
Criterion E.	Specific evidence from materials and review team consensus reasoning: We found no evidence of a pre-assessment, summative assessment, or a self-assessment.
	Suggestions for improvement: We suggest that the authors consider identifying some assessments to create a coherent system. This will help provide evidence about each student’s learning and can be used to inform instruction.
Criterion F.	Specific evidence from materials and review team consensus reasoning: Students are engaged with conducting investigations, asking questions, and collecting data within each lesson as it relates to the DCIs.
	Suggestions for improvement: We suggest that the authors consider formalizing opportunities for student to connect the CCCs to their work. Additionally, we suggest including explicit opportunities for students to receive and respond to teacher and peer feedback prior to Lesson 11. For example, consider having students look at each other’s Activity Sheets to offer a compliment or a suggestion, i.e. I like the way..., You might want to think about

Summary Comments

See commentary within each Category.

<p>Unit Rating Scale for Category I (Criteria A–F):</p> <p>3: At least adequate evidence for all of the unit criteria in the category; extensive evidence for criteria A–C</p> <p>2: At least some evidence for all unit criteria in Category I (A–F); adequate evidence for criteria A–C</p> <p>1: Adequate evidence for some criteria in Category I, but inadequate/no evidence for at least one criterion A–C</p> <p>0: Inadequate (or no) evidence to meet any criteria in Category I (A–F)</p>
<p>Unit rating scale for Category II (Criteria A–G):</p> <p>3: At least adequate evidence for all criteria in the category; extensive evidence for at least two criteria</p> <p>2: Some evidence for all criteria in the category and adequate evidence for at least five criteria, including A</p> <p>1: Adequate evidence for at least three criteria in the category</p> <p>0: Adequate evidence for no more than two criteria in the category</p>
<p>Unit Rating scale for Category III (Criteria A–F):</p> <p>3: At least adequate evidence for all criteria in the category; extensive evidence for at least one criterion</p> <p>2: Some evidence for all criteria in the category and adequate evidence for at least five criteria, including A</p> <p>1: Adequate evidence for at least three criteria in the category</p> <p>0: Adequate evidence for no more than two criteria in the category</p>

Overall Rating:

E: Example of high quality NGSS design—High quality design for the NGSS across all three categories of the rubric; a lesson or unit with this rating will still need adjustments for a specific classroom, but the support is there to make this possible; exemplifies most criteria across Categories I, II, & III of the rubric. (total score ~8–9)

E/I: Example of high quality NGSS design if Improved—Adequate design for the NGSS, but would benefit from some improvement in one or more categories; most criteria have at least adequate evidence (total score ~6–7)

R: Revision needed—Partially designed for the NGSS, but needs significant revision in one or more categories (total ~3–5)

N: Not ready to review—Not designed for the NGSS; does not meet criteria (total 0–2)