From Sun to Food
EQuIP Rubric for Science Evaluation

Unit Name: MySci: From Sun to Food
Grade: 5th
Date of Review: October 2018
Overall Rating (N, R, E/I, E): R - Quality Work in Progress
Category I: NGSS 3D Design Score (0, 1, 2, 3): 2
Category II: NGSS Instructional Supports Score (0, 1, 2, 3): 2
Category III: Monitoring NGSS Student Progress Score (0, 1, 2, 3): 1
Total Score (0-9): 5
Click here to see scoring guidelines

This review was conducted by the Science Peer Review Panel using the EQuIP Rubric for Science.

Category I Criteria Ratings		Category II Criteria Ratings		Category III Criteria Ratings	
A. Explaining Phenomena/Designing Solutions	Adequate	**A. Relevance and Authenticity**	Adequate	**A. Monitoring 3D Student Performances**	Adequate
B. Three Dimensions	Adequate	**B. Student Ideas**	Adequate	**B. Formative**	Inadequate
C. Integrating the Three Dimensions	Extensive	**C. Building Progressions**	Adequate	**C. Scoring Guidance**	Inadequate
D. Unit Coherence	Adequate	**D. Scientific Accuracy**	Adequate	**D. Unbiased Tasks/Items**	Adequate
E. Multiple Science Domains	Adequate	**E. Differentiated Instruction**	Adequate	**E. Coherence Assessment System**	Inadequate
F. Math and ELA	Adequate	**F. Teacher Support for Unit Coherence**	Extensive	**F. Opportunity to Learn**	Adequate
		G. Scaffolded Differentiation Over Time	Inadequate		

Summary Comments

The reviewers commend the authors of this unit for creating such an engaging and coherent set of lessons. The authors of this unit "From Sun to Food" have provided a variety of different learning opportunities that give students the opportunity to integrate the three dimensions. The storyline of the pizza farm pulls together the learning well in all four sections of this unit, and this storyline would certainly be engaging for grade 5 students. While numerous strategies are provided for engaging students, the unit would benefit from greater differentiation in terms of the artifacts that students produce as evidence of their learning. This unit is also well supported with a variety of ways to integrate Common Core State Standards and provides resources that support the application of those standards. Students' learning is supported through the integration of technology when appropriate and available. The progression of learning builds in rigor and complexity as students apply their understanding of the science to engineer a farm with the capacity to produce ingredients for pizza with the constraints of environmental considerations. Reviewers did note that guidance for teacher and student learning was limited in terms of assessments and how to use that information to support identified targets.

Category I. NGSS 3D Design

Score: 2

I.A. Explaining Phenomena/Designing Solutions: Making sense of phenomena and/or designing solutions to a problem drive student learning.

i. Student questions and prior experiences related to the phenomenon or problem motivate sense-making and/or problem solving.
ii. The focus of the lesson is to support students in making sense of phenomena and/or designing solutions to problems.
iii. When engineering is a learning focus, it is integrated with developing disciplinary core ideas from physical, life, and/or earth and space sciences.

Rating for Criterion I.A Explaining Phenomena/Designing Solutions: Adequate

(None, Inadequate, Adequate, Extensive)

The reviewers found adequate evidence that this unit gives students the opportunity to make sense of phenomena and design solutions to problems.

In Section 1: Curriculum, the Storyline describes that the unit is driven by the phenomenon "to figure out why we eat food, yet do not look like the food we eat and use the hook, you eat pizza, yet you do not look like pizza… explain why this true?" (p. 2). Students in grade 3 learn about inheritance and variation of traits (3.LS3.A & 3.LS3.B) so they could answer the question based on their prior knowledge. This phenomenon feels disconnected initially. Please see the suggestions for improvement to craft the wording of the phenomenon so that this unit is more cohesive. Students return to the phenomenon multiple times over the course of the unit to add layers of explanation based on learning from each investigation.

In the Evaluate section, the guide reads, "Revisit the unit phenomenon of eating pizza." (p. 6).

Engineering is a learning focus in Lessons 10 and 11 from Section 4. These lessons require students to use what they know about the cycling of energy and matter to improve or protect their school and to design a farm that harms the environment as little as possible while still feeding a large amount of people (p. 4). The initial design of the pizza farm begins in Lesson 1 and students continue to add, revise, and re-design their farms to incorporate new science learning to meet the criteria and constraints of the engineering design challenge.

Suggestions for Improvement

The phenomena of energy transference and movement of matter may be more explicit if the question to students were revised to "Where does my pizza come from?" as the phenomenon that drives the unit. The question used currently appeared disconnected and the team felt that such a question does not qualify as a phenomenon. In reading through the lessons, what appears to be the question that drives students learning is: Where do the ingredients come from?

I.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) that are deliberately selected to aid student sense-making of phenomena and/or designing of solutions.

Provides opportunities to *develop and use* specific elements of the SEP(s).

Provides opportunities to *develop and use* specific elements of the DCI(s).

Provides opportunities to *develop and use* specific elements of the CCC(s).

Rating for Criterion I.B. Three Dimensions: Adequate

(None, Inadequate, Adequate, Extensive)

The reviewers found adequate evidence that the materials give students opportunities to build understanding of grade-appropriate elements of the three dimensions.

Science and Engineering Practices (SEPs): Adequate

There is adequate evidence that this unit provides opportunities to develop and use specific elements of the SEPs.

Developing and Using Models

Grade 3-5 Element: Develop and/or use models to describe and/or predict phenomena.

Students develop and/or use the Pizza Farm Model, the Energy Diagram for Pizza, and the photosynthesis game to explain how matter is cycled and energy is transferred through ecosystems. The Clarification statement states "Examples of models could include diagrams, and flowcharts." Two examples are as follow; however, students could potentially be able to describe phenomena without completing the models.

- On page 18 - Energy Diagram for Pizza: This example is pre-designed, and students use a word bank to complete the diagram.
- On page 19 - "I Am What I Eat" flowchart: This example is already formatted for students who complete the flowchart by filling in vocabulary, which is not really asking students to create the model or use it to explain phenomena.

Other examples include:

- Page 3, with the addition of arrows to show the flow of how energy and matter move on the farm; This model is revisited throughout the lessons (e.g., they revisit the model in Lesson 3 after they learn about air, light, and water)
- Page 10-11, students create a model playing the Photosynthesis Game
- Page 21, where students can also use a model to communicate their argument regarding Decomposition and if there were no decomposers in an ecosystem. This is the best evidence for this SEP, which asks students to use the model to explain their phenomena. However, the use of the model in that lesson appears optional as the directions state, "You may also draw a picture model to help communicate your argument." This could be a strong piece of evidence for this SEP if it were required as part of the argument.

Plan and Carry Out Investigations

Grade 3-5 Element: Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered.

One below-grade-level example can be found in Lesson 2, in which students are given instructions about an investigation that is already planned. The sprouter is set up and the type and quantity of beans are handed to students. They are given explicit directions about what data to collect and how to calculate the measurements.

Lesson 2 also includes an investigation regarding how plant increase in mass; however, students do not plan the investigation nor are there opportunities to discuss the variables or number of trials. Students are asked on page 7 of the student journal, "What other investigations would you like to do to further investigate your claim about what causes plant matter to increase?" This may be part of getting to "collaborative" part of this element.

Evidence of students using the element can be seen in Lessons 3 and 4, beans under different conditions, and decaying leaves. Specifically,

- In Lesson 3, the class discusses variables related to an experiment where beans will be grown under different conditions. Students compare plant growth under a variety of conditions, water, air, and light.
- In Lesson 4, page 15, students plan an investigation to observe plant materials in water, soil, and other plant materials (Students journal page 12) to see what happens to dead plant material. And it is evident in the discussion on page 22 of the Teacher Pages when the class talks about the variables to keep the same such as the amount and type of plant material, etc.

Plan and Carry Out Investigations
Grade 3-5 element: Make observations and/or measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution.

Students use and develop this unit in Lesson 2, where they consider the massing of the dry seeds and then the wet seeds to provide evidence about where the plant's mass comes from as it grows.

Asking Questions
Grade 3-5 Element: Ask questions that can be investigated and predict reasonable outcomes based on patterns such as cause-and-effect relationships

Students have multiple opportunities to engage with this practice; however, the "predict reasonable outcomes based on patterns" part of the element is not explicit in many of the opportunities to question. For example,

- In Lesson 1, page 5, students add questions to a chart produced in class in the Explore and Explain phases. Students ask questions about eating pizza, where the ingredients for pizza come from, and what happens to the pizza after you eat it. These questions frame the unit and the answers will be investigated in a variety of ways throughout the unit.
- In Lesson 2, page 10, students ask questions about the type of food that grows from their experience in the Explain section.

Asking Questions
Grade 3-5 Elements: Use prior knowledge to describe problems that can be solved; Define a simple design problem that can be solved through the development of an object, tool, process, or system ~~and includes several criteria for success and constraints on materials, time, or cost~~.

Students partially use and develop these elements. In Lesson 10, students explore the school environment to document how the school uses its resources. Then students work in small groups to ask a question or choose a problem for which they would like to develop a solution. In Lesson 11, in which they develop a question to investigate and record it in Student Journal, page 22. They can then make predictions based on learning from the unit. The part of the element not addressed may be included in the Extend portion of the lesson on page 6 of Section 4, where students implement their solution and there is some consideration of cost and time.

Engaging in Argument from Evidence
Grade 3-5 Element: Construct and/or support an argument with evidence, data and/or a model

Examples of students using this element include:

- On page 11 of the Student Science Journal, students "argue" using evidence from their experiment about where plants get matter they need to grow. It asks students to describe how their thinking has changed as a result of class experiments and discussions and asks for evidence from the experiments in their response.
- Students also argue what might happen if there were no decomposers (page 21 Student Science Journal, titled Decomposition) using evidence from their experiments on dead plant material as well as on the book, *A Log's Life*
- Students also use this element on page 6 in the Elaborate phase of Lesson 10, and on student page 7 when asked about the change in mass in the sprouts.

Analyzing and Interpreting Data
Grade 3-5 Element: Represent data in graphical displays, (bar graphs, pictographs and/or pie charts) to reveal patterns that indicate relationships

Partial or below-grade-level examples include:

- On Student page 10, the Bean Data Collection sheet, students graph the stem length over time. There is no explicit description for students to describe patterns they observe in the data.
- On student page 13, the Evaluate section asks students to use data to answer the question, "What is the relationship between dead plants and soil?" This data comes from a table that has been completed (see student page 12), so students themselves were not representing data.

Analyzing and Interpreting Data
Grade 3-5 element: *Analyze and interpret data to make sense of phenomena, using logical reasoning, mathematics, and/or computations*

Students use this element when they interpret their data table for the experiments that they run in Lessons 2, 3, and 4 (See Student Science Journal pages 6-10 and pages 12-13)

Analyzing and Interpreting Data
Grade 3-5 element: *compare and contrast data collected by different groups in order to discuss similarities and differences in their findings*

Students use this element in Lesson 4 when each groups of students tested dead plant material under a different set of conditions.

Obtaining, Evaluating, and Communicating Information
Grade 3-5 Element: Obtain ~~and combine~~ information from books and/or other reliable media to explain phenomena or solutions to a design problem

This unit has many supporting materials such as the books and online resources, but no explicit opportunities for students to combine the information. While some students may naturally come to this way of thinking, other students may choose to favor certain resources and not include a combination of resources.

An example of students partially using this element includes Lesson 11, in which students use various texts and are provided opportunities to speak, listen, write, and present information when student research farming and the environment.

Disciplinary Core Ideas (DCIs): Extensive
There is extensive evidence that this unit provides opportunities to develop and use specific elements of the DCIs. Nine DCIs are listed in the unit, although the performance expectations explicitly link to the following DCIs:

PS3.D Energy in Chemical Processes and Everyday Life
Element: the energy released from food was once energy from the Sun that was captured by plants in the chemical process that forms plant matter from air and water
Examples:

- The photosynthesis game could be a model of this element description.
- Teacher page 15, Read Aloud Guide: Living Sunlight, is support for this element.
- Lesson 6 is the photosynthesis game where students use ping pong balls to model how water, carbon dioxide, and sunlight make sugar.
- Lesson 8 is where students study food chains, starting with the sun.
- Evidence can be also found for this DCI in Lessons 1 and 7

LS1.C Organization for Matter and Energy Flow in Organisms
Element: Food provides animals with the materials they need for body repair and growth and the energy they need to maintain body warmth and for motion; Plants acquire their material for growth chiefly from air and water
Examples:

- Students watch a video that supports the idea that food gives animals energy, although not explicitly linked to warmth and growth.
- The sprout lab is connected to the element: *plants acquire their material for growth chiefly from air and water.*
- Evidence can also be found for this DCI in the he read aloud Guide on Teacher page 13 for Photosynthesis and Lessons 2, 3, 5 and 6.

LS2.A Interdependent Relationships in Ecosystems
Element: The food of almost any kind of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. Some organisms, such as fungi and bacteria, break down dead organisms (both plants or plants parts and animals) and therefore operate as "decomposers." Decomposition eventually restores (recycles) some materials back to the soil. Organisms can survive only in environments in which their particular

needs are met. A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life. Newly introduced species can damage the balance of an ecosystem.
Examples:

- Student page 17 where students are asked, "What do living things get from plants?"
- Student page 18, Energy Diagram for Pizza
- Student page 19, I Am What I Eat Flow Chart,
- Several texts including Pass the Energy, Please!, Living Sunlight, A Log's Life, etc.
- Teacher page 23 titled Decomposition asks students what might happen if there were no decomposers in an ecosystem.
- Additional evidence can be found in Lessons 1, 7, 8 and 9.

LS2.B Cycles of Matter and Energy Transfer in Ecosystems
Element: Matter cycles between the air and soil and among plants, animals, and microbes as these organisms live and die. Organisms obtain gases, and water, from the environment, and release waste matter (gas, liquid, or solid) back into the environment.
Examples:

- There are several texts that support the idea of cycling matter and energy including Pass the Energy, Please! (Teacher page 18), and Living Sunlight (Teacher page 15), Log's Life (Teacher page 27)
- Students create and use models that support this DCI including: Photosynthesis Game (Teacher page 10), and the Pizza Farm model (Teacher page 3), which is revised by students as their ideas evolve,
- Additional evidence can be found in Lesson 1, 7 and 8.

There is evidence for one other DCI not identified by the unit: **PS1.A: Structure and Properties of Matter**
Grade 3-5 element: The amount (weight) of matter is conserved when it changes form, even in transitions in which it seems to vanish.
For example, in Lesson 9 students describe what happened to the matter of a tree that has died and seemingly "disappeared" due to decomposition, which may be evidence for this DCI element.

Crosscutting Concepts (CCCs): Adequate
There is adequate evidence that this unit provides opportunities to develop and use specific elements of the CCCs. CCCs identified explicitly connected to the four performance expectations are:

Systems and System Models
Grade 3-5 element: A system can be described in terms of its components and their interactions.
This crosscutting concept is the essence of the unit. For example:

- This CCC is carried throughout the unit with the referencing of the "system" of the Pizza Farm. Students talk about their pizza farm and its components, the plants and the animals, the source of the ingredients for the pizza. Students discuss the way plants interact with water, air and sunlight to grow, as well as how the plants interact the animals to provide them with energy, and they discuss how dead plants interact with environment to decompose. See evidence for multiple opportunities in Lesson 1, Lesson 5, Lesson 10 and Lesson 11.
- On Student Page 3, with the addition of arrows to show the flow of how energy and matter move on the farm. The addition of the arrows appears to represent the interactions.
- In Lesson 8, the students describe how energy moves through a food chain (student workbook page 19).

Systems and System Models
Grade 3-5 element: A system is a group of related parts that make up a whole and can carry out functions that its individual parts cannot.
For example, this element is evident in Lesson 5, when students talk a about the plant being a system made of different parts such as the flower, fruit, stem, roots and leaves (page 15 Student Science Journal).

Energy and Matter: Flows, Cycles, and Conservation
Grade 3-5 Element: Energy can be transferred in various ways and between objects.
Flows, cycles, and investigation are central to this entire unit and specifically addressed with:

- Photosynthesis (Lesson 6) - In Lesson 6, teacher page 7, students learned that the process of photosynthesis involves energy (sunlight) and small particles that move in to the plant, and the plants use energy to change air and water into their own matter.
- Food Chains (Lesson 8) - In this lesson, "students add arrows to their diagram to show the flow of energy form the sun to Carlos." (Carlos is making and eating a pizza.) Students also trace the flow of energy in Missouri Pond. Pages 18, 19, and 20 are all ways in which students document the various ways energy is transferred and between objects.

Energy and Matter: Flows, Cycles, and Conservation
Grade 3-5 Element: Matter flows and cycles can be tracked in terms of the weight of the substances before and after a process occurs. The total weight of the substances does not change. This is what is meant by conservation of matter. Matter is transported into, out of, and within systems.
For example:

- Sprouter investigation (Lesson 2) - Students measure the weight of the dry beans before and after water has been added to the beans. As the beans are sprouting, students measure the weight of the seeds with the tray before rinsing and after the water has been drained. This procedure is being followed to show that the water is being transported into the seeds in this system of the bean sprouter. The goal is to show that in a system that supports plant growth the observed increased mass of the sprouting plant is not coming from soil but from water (and air). Lesson 2 is followed up by Lesson 3, where students grow beans in a closed system (the plant within a plastic bag) to establish the materials that are needed to be transported into a plant for a plant to grow.)
  Decomposition (Lesson 4 and Lesson 9) - In Lesson 4, students set up an experiment to test the decomposition of plant materials under different conditions. And in Lesson 9 evaluate the results of that experiment and along with additional learning, realize that dead plants become matter that is transported into the system of the soil.

- Photosynthesis (Lesson 6) - This is also addressed in Lesson 6, where students "build glucose" within the system by rearranging water and carbon dioxide molecules (ping pong balls) by that have been transported into the plant system. (The concept of the plant as a system is established in Lesson 5.)

Other CCC opportunities identified for this unit include:

Cause and Effect: **Mechanism and Prediction**
Element: Cause and effect relationships are routinely identified, tested, and used to explain change.
For example:

- In Lesson 2, students predict and test what effect adding water will have on the beans. Students then determine what causes the bean sprouts to change in mass.
- In Lesson 7 on why plants are important, students explore what caused the changes in the world map forests from 1990 to 2015. Page 17 of the student journal may have students consider what they think caused the change, which could identify a change or identify an effect or consequence of the change.

Scale, Proportion, and Quantity
Element: *Standard units are used to measure and describe physical quantities such as weight, time, temperature, and volume*.
For example:

- In Lesson 2, length and mass (weight) measurements are made in the sprouter and bean investigations
- In Lesson 3, students use standard units to measure length of root stems and roots
- In Lesson 9 and 11, there are calculations of total kilocalories produced by the farms which students design.

Suggestions for Improvement
SEPs
Some of the lessons provide students with the opportunity to develop questions, but the developer might consider including more opportunities for students to develop their own questions. To Plan and Carry out Investigations at the grade appropriate level, consider omitting identification of dependent and independent variables as that is beyond grade level and addressed in middle school.

CCCs
Consider emphasizing how each part of the plant is structured to do certain functions, for example making explicit how a root is uniquely shaped to absorb water for the plant. The unit could more completely give students the opportunity to use and develop the CCC **Energy and Matter**, as the unit largely focuses on the transport of matter into, out of, and within the system, but would be improved if it addressed more the conservation of mass as described in the element by tracking conservation of terms of weight. This is attempted in Lesson 2, but perhaps could also be done in Lessons 4 and 9 with the weighing the cups of dead plant material before and after.

I.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.

Rating for Criterion I.C. Integrating the Three Dimensions: Extensive

(None, Inadequate, Adequate, Extensive)

The reviewers found extensive evidence that student performances integrate elements of the three dimensions in service of figuring out phenomena and/or designing solutions to problems. The authors have done a good job of integrating multiple SEPS and CCCs with the DCIs so that students can design a farm with minimal impact on the environment. The developer has a framework that shows how the three dimensions are connected towards the back of the Teacher Resource book. Also, each lesson discusses the SEPs and CCCs.

The driving questions related to phenomena that students make sense of include:

- where do ingredients that make up pizza come from?
- how do plants that provide some of the ingredients take sun's energy, water and carbon dioxide and make food?
- What are the food chains associated with humans eating pizza? (Note this is not precisely the phenomena identified by the authors. See section A).

Here are several examples related to the overall unit phenomenon of designing a pizza farm:

- In Lesson 1, students *develop* an initial model (SEP) of their pizza farm to *predict* (Cause and Effect CCC) how energy and matter (DCI) move through the farm. The movement of energy and matter brings in the CCC of Energy and Matter (element: *energy can be transferred in various ways and between objects*.) This CCC and the SEP of modeling is integrated with the DCI LS2.B Cycles of Matter and Energy Transfer in Ecosystems. Furthermore, the farm is a system, which addresses the element of System and System models- *a system can be described in terms of its components and their interactions*.
- In Lesson 2 (Section 1 Curriculum page 15), Lesson 3 (Section 1 Curriculum page 19), and Lesson 5 (Section 2 Curriculum page 9), students return and revise their initial model (SEP) each time adding more details. The new learning represented in the revised models uses this element of DCI LS1.C *plants acquire their material for growth chiefly from air and water* and addresses the element of CCC of energy and matter that addresses conservation of matter and the how matter is transported into, out of and within systems. In Lesson 9 (Section 3: Curriculum p. 16) Students again revise their model (SEP) still addressing the CCC Energy and Matter and the DCI of LS2.B Cycles of Matter and Energy Transfer in Ecosystems.
- In a design challenge in Lesson 11 (Section 4: Curriculum pages 10-12), students redesign their pizza farms continuing to use the SEP of modeling but now also employing SEP of Using Mathematics and Computational Thinking to demonstrate an understanding of the core ideas in DCI ESS3.C.

Here's an example of a lesson-level activity:

- On page 11 of the Student Science Journal, students are using Engaging in Argument From Evidence (SEP), Cause and Effect (CCC), and PS1. A: Structure and Properties of Matter (DCIs). They "argue" using evidence from their bean sprout experiment about where plants get matter they need to grow. It asks students to describe how their thinking has changed as a result of class experiments and discussions and asks for evidence from the experiments in their response.

Suggestions for Improvement

N/A

I.D. Unit Coherence: Lessons fit together to target a set of performance expectations.

Each lesson builds on prior lessons by addressing questions raised in those lessons, cultivating new questions that build on what students figured out, or cultivating new questions from related phenomena, problems, and prior student experiences.

The lessons help students develop toward proficiency in a targeted set of performance expectations.

Rating for Criterion I.D. Unit Coherence: Adequate

(None, Inadequate, Adequate, Extensive)

The reviewers found adequate evidence that lessons fit together coherently to target a set of performance expectations.

The Engage Section of every lesson started with questioning. Typically, students are asked a question that involves reviewing knowledge specifically from the previous lesson (noted in Lessons 3, 4, 5) or lessons before that (Lesson 9, 10, 11) to set the groundwork for the current lesson's exploration. Coherence is achieved by students continually coming back to the pizza farm and refining their model of the farm based on the learning from the lesson that they have just completed. The pizza farm then is the springboard for the "design challenge" in Lesson 11.

Suggestions for Improvement
As mentioned in Criterion I.B, consider increasing opportunities for students to develop their own questions rather than relying on teacher-developed questions.

I.E. Multiple Science Domains: When appropriate, links are made across the science domains of life science, physical science and Earth and space science.
Disciplinary core ideas from different disciplines are used together to explain phenomena.
The usefulness of crosscutting concepts to make sense of phenomena or design solutions to problems across science domains is highlighted.

Rating for Criterion I.E. Multiple Science Domains: Adequate

(None, Inadequate, Adequate, Extensive)

The reviewers found adequate evidence that links are made across the science domains when appropriate because the performance expectations come from Life Science, Earth and Space Science, Physical Science (referencing DCIs LS1.C, LS2.A, LS2.B, ESS3.C, LS1.C, PS3.D, ETS1.A, and ETS1.B). The links are made across the domains and support students making sense of the ideas at the element level.

Suggestions for Improvement
There may be opportunities for students to consider ideas in ESS2.A for soil.

I.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.

Rating for Criterion I.F. Math and ELA: Adequate

(None, Inadequate, Adequate, Extensive)

The reviewers found adequate evidence that the materials provide grade-appropriate connections to mathematics and English language arts (ELA) standards because skills from Common Core State Standards (CCSS) are referenced in each lesson.

ELA examples:

- Students' verbal and written responses to Read-Aloud Photosynthesis: Changing Sunlight into Food, Pass the Energy Please, A Log's Life;
- Summarizing investigation in Lesson 4;
- Claims/Evidence/Reasoning on Decomposition in Lesson 9;

- Research Lessons 10 & 11; and
- students writing about a tomato plant in Lesson 2

Mathematics examples:

- In Lesson 2, calculations of bean sprout mass, graphing plant growth; and
- In Lesson 11, calculating kilocalories, reading and & developing pictograms.

Suggestions for Improvement

Some of the math opportunities are not grade-appropriate. For example, independent and dependent variable relationships are more appropriate for middle school in the CCSS (6.EE.9), although measurement opportunities are more aligned with third grade CCSS standards.

Overall Category I Score (0, 1, 2, 3): 2

Unit Scoring Guide – Category I
Criteria A-F
3: At least adequate evidence for all of the unit criteria in the category; extensive evidence for criteria A–C
2: At least some evidence for all unit criteria in Category I (A–F); adequate evidence for criteria A–C
1: Adequate evidence for some criteria in Category I, but inadequate/no evidence for at least one criterion A–C
0: Inadequate (or no) evidence to meet any criteria in Category I (A–F)

Category II. NGSS Instructional Supports

Score: 2

II.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.

i. Students experience phenomena or design problems as directly as possible (firsthand or through media representations).
ii. Includes suggestions for how to connect instruction to the students' home, neighborhood, community and/or culture as appropriate.
iii. Provides opportunities for students to connect their explanation of a phenomenon and/or their design solution to a problem to questions from their own experience.

Rating for Criterion II.A. Relevance and Authority: Adequate

(None, Inadequate, Adequate, Extensive)

The reviewers found adequate evidence that the materials engage students in authentic and meaningful scenarios that reflect the real world.

Students can relate to the phenomena because many students enjoy eating pizza and have prior experience of eating pizza. Abundant links to short videos (media) support and/or build on firsthand experiences throughout. Here are some lesson-level examples:

- The sprouter investigation (Lesson 2), bean investigation (Lesson 3 & 5), investigation of the decomposition of a plant part (Lesson 4 & 9) all provide opportunities for firsthand experiences as does the modeling activity of the Photosynthesis Game in Lesson 6.
- Lesson 10 provides an opportunity for students to apply their learning from previous lessons to the school community.
- In Lesson 4, students are asked whether they compost at their house or school, if the school composts leftover lunch materials, to connect and lead to a discussion about the purpose and benefits of composting generally.
- The unit has a parent letter to go home, which may help connect instruction with students' homes.

Suggestions for Improvement

The reviewers agree that the choice of pizza was one that would interest students. Authors might consider that many urban, even suburban students would not know where the ingredients come from so may struggle to draw the original pizza farm produced in Lesson 1. Students may struggle with the connection between wheat plants and flour crust and between pigs, cows, and pepperoni. The reviewers recommend after Lesson 1, where students do an initial drawing of a pizza farm, to include an explicit note for teachers to do a formative check for how the different ingredients are portrayed on the farm. Teacher could then determine if students need more information or have questions.

II.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.

Rating for Criterion II.B. Student Ideas: Adequate

(None, Inadequate, Adequate, Extensive)

The reviewers found adequate evidence that the materials provide students with opportunities to both share their ideas and thinking and respond to feedback on their ideas.

There are multiple examples of evidence for providing students opportunities to express ideas and respond to peers:

- In many lessons, during the Engage section, students turn and talk to partners after a question is presented. Turn and talk provides opportunities for students to respond and provide feedback to students and it is used multiple times throughout the unit (e.g., Lesson 8, page 6 in the Engage section).
- Questioning also happens during the Explore and Explain sections, where students interpret results and justifying claims (e.g., Lessons 2, Lesson 3 or read and discuss in Lessons 4, 6, 7, and Think, pair and share Lesson 9).
- "Talk Moves" are referenced in Lesson 2, and 9 and there is a Gallery Walk in Lesson 9.
- Links to other strategies are provided, such as the Discussion Diamond in Lesson 7, mention of applications such as Quizizz in Lesson 6, Teaching Tip in Lessons 1 and 10 and self-documentation techniques Lesson 10.
- Students have a journal for recording responses throughout the unit.

Suggestions for Improvement

Consider providing opportunities for more specific formalized feedback to which students can respond.

II.C. Building Progressions: Identifies and builds on students' prior learning in all three dimensions, including providing the following support to teachers:
Explicitly identifying prior student learning expected for all three dimensions
Clearly explaining how the prior learning will be built upon.

Rating for Criterion II.C. Building Progressions: Adequate

(None, Inadequate, Adequate, Extensive)

The reviewers found adequate evidence that the materials identify and build on students' prior learning in all three dimensions.

The summaries that start each lesson identify the prior student learning from previous lesson(s) and explain how that learning will be built upon in the current lesson.

Lesson 9, page 9 in the Explore section discusses how in the food chain, energy and matter is used to move, grow, and stay warm. This was learned in Lesson 1.

Authors identify learning from previous years and evidence. For example, in Lesson 1, learning in K-2 and Lesson 5 learning in Grade 4 is referenced. (Note the focus here is on content (DCIs).)
In the unit, the developer scaffolds the students learning to identify and build on students' prior knowledge in all three dimensions. For example, in lesson 1, the developers make sure that students understand what living things need to do. This is to help students prepare for the modeling (and later designing) a pizza farm, and the developer explicitly suggests teachers can differentiate the lesson based on their previous knowledge. In the Summaries that start each lesson, prior learning for all three dimensions is identified.

For example:

- In Lesson 1 (Section 1: Curriculum page 7), the authors state students may come with an understanding of what living things need to survive. (DCI LS1.C) They may also have an understanding that living things have adaptations that help them get what they need to survive (DCI LS1.A). They also note that in grades K-2 students may have developed or used a model (SEP), and that "In K-2, students may understand that objects can break into smaller pieces and be put together into larger pieces. We build on this by introducing the idea that energy can be transferred, and food matter can be broken down and then built up into new matter" (CCC).
- The summary of prior learning before starting Lesson 7 (Section 3: Curriculum page 6) says: "In the previous lessons, students figured out that plants need small particles of carbon dioxide and water to build their matter, and light energy to change those small particles into their own plant matter." (DCI LS1.C *plants acquire their material for growth chiefly from air* and water; CCC Energy and Matter- *matter is made of particles.)* "...They figured out that different parts of the plant help the plant get those materials." (CCC Structure and Function.)
- In Lesson 5, Engage Section, it states that "students may come with background knowledge of the structures and functions of different parts of a plant" (4-LS1-1, CCC). In this unit, the students build background knowledge of why plants have those structures.

Suggestions for Improvement

Consider more explicit references to SEPs and CCCs from previous years, as the prior learning tends to focus more on DCIs. For example, when **Planning and Carrying out Investigations** with students in grade 5, students should already know what a fair test is and what variables are identified and used. Lesson 2, 3, and 4 is an opportunity for teachers to formatively observe how much of the prior understandings are successfully being applied in new investigations.

II.D. Scientific Accuracy: Uses scientifically accurate and grade-appropriate scientific information, phenomena, and representations to support students' three-dimensional learning.

Rating for Criterion II.D. Scientific Accuracy: Adequate

(None, Inadequate, Adequate, Extensive)

The reviewers found adequate evidence that the materials use scientifically accurate and grade appropriate scientific information. Investigations use scientifically accurate information in texts and activities. Lessons 4, 5, 6, 8, and 9 have strong evidence of connections to scientifically accurate information.

Suggestions for Improvement

Some areas in this unit may include above grade-appropriate scientific information. Examples of areas for reconsideration include: Elaboration on the forest in lesson 7 because the relationship between CO_2

and global warming is not discussed at 3-5 grade band; the relationship between oxygen and cellular respiration also appears above grade level.

Consider providing some information to the teachers to support them in addressing potential student misconceptions (in particular, students who may not know the connection between wheat and pizza crust, cows and milk, and cows and pigs and pepperoni).

II.E. Differentiated Instruction: Provides guidance for teachers to support differentiated instruction by including:

Appropriate reading, writing, listening, and/or speaking alternatives (e.g., translations, picture support, graphic organizers, etc.) for students who are English language learners, have special needs, or read well below the grade level.

Extra support (e.g., phenomena, representations, tasks) for students who are struggling to meet the targeted expectations.

Extensions for students with high interest or who have already met the performance expectations to develop deeper understanding of the practices, disciplinary core ideas, and crosscutting concepts.

Rating for Criterion II.E. Differentiated Instruction: Adequate

(None, Inadequate, Adequate, Extensive)

The reviewers found adequate evidence that the materials provide guidance for teachers to support differentiated instruction because there are multiple ways students could access learning and, in that respect, learning was differentiated. The multiple ways include partner talk, whole class conversations, Read-Alouds, videos, hands-on activities, modeling.

There are multiple resources and strategies offered support differentiation. For example:

- The unit provides a variety of ways students can access learning: partner talk, “think, pair, share”, whole class conversations, group work, Read-alouds, videos, hands-on activities, and modeling. By offering a variety of different approaches to learning, the authors have provided one way of differentiating instruction.
- The authors provide many opportunities for students to work with a partner or in small groups. Talking with classmates helps English learners strengthen their language skills. Students, who are weak writers benefit from discussion on a topic before writing on that topic. Specifically,
    - Lesson 2, the engage section, the students share their Tomato Writing Prompt (Student Page 5) with a partner or in small groups.
    - Lesson 6, the engage section, the students are invited to turn and talk from questions that are asked by the teacher.
- Below are three instances the authors have specifically identified ways to differentiate:
    - “for differentiation you could have students design their own investigations based on the Engage question or you could walk students through the steps.” (Section 1: Curriculum page 17)
    - “allow student to change or refine any answers on Student page 16. For differentiation for ELL learners, you could also allow them to draw pictures. As an alternative, or for extra multimedia opportunities for your students to solidify their knowledge of photosynthesis, allow students to go through the following slide show.” (Section 2: Curriculum page 6)

- "For ELL or struggling readers, you could read chosen articles aloud as they follow along or you could use partner reading strategies. Here are some further ideas from ASCD for helping ELL." (Section 4: Curriculum page 7, 8, Explain section)

Suggestions for Improvement

Given the length of this unit and the complexity of some of the concepts, more differentiation would be useful. Suggest more challenging assignments for advanced students and alternative assignments to struggling learners. While unit provides multiple ways by which students can receive information, students typically are not provided with multiple ways by which they can demonstrate knowledge. For example, in lesson 11, when students design their ideal farm, some students may find it more meaningful to use manipulatives than pencil and paper or integration of other technologies where available.

II.F. Teacher Support for Unit Coherence: Supports teachers in facilitating coherent student learning experiences over time by:

Providing strategies for linking student engagement across lessons (e.g. cultivating new student questions at the end of a lesson in a way that leads to future lessons, helping students connect related problems and phenomena across lessons, etc.).

Providing strategies for ensuring student sense-making and/or problem-solving is linked to learning in all three dimensions.

Rating for Criterion II.F. Teacher Support for Unit Coherence: Extensive

(None, Inadequate, Adequate, Extensive)

The reviewers found extensive evidence that the materials support teachers in facilitating coherent student learning experiences over time because, as mentioned above, lesson summaries and lesson engagement sections link student learning experiences over time.

The Engagement section of each lesson promotes student questioning, which then drives the learning in the lesson. Continually coming back to the pizza farm and refining the model based on the learning in the lesson ensures sense-making in terms of content and the process itself involves the SEP of **Developing and Using Models** the CCC of **System and Systems Models**.

Suggestions for Improvement

N/A

II.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.

Rating for Criterion II.G. Scaffolded Differentiation Over Time: Inadequate

(None, Inadequate, Adequate, Extensive)

The reviewers found inadequate evidence that the materials support teachers in helping students engage in the practices as needed and gradually adjusts supports over time.

Some evidence that meets this criterion includes students moving from teacher Read-Aloud opportunities with guiding questionnaires in Lessons 5, 6, 7,8, and 9 to doing their own research in Lessons 10 and 11. The reviewers found, however, that there was not an adequate gradual release of responsibility to the students for much of the research and reading.

Suggestions for Improvement

Structured research sheets could be developed that would prompt students to consider multiple sources and use sentence stems to support students to be more independent over time. "Chunking" might be a way to make progress with some students and provide a check-in so that teachers would be able to monitor progress without developing dependence for planning, researching and writing.

Consider where in the unit students could be increasingly more responsible for their sense-making. For example, in the bean sprout experiment in Lesson 3, the set-up is defined, and variables identified for students, and that is similar to Lesson 4. Instead, consider having students, using their experience with experimental design from Lesson 3 and under teacher's guidance, define the set-up and identify the variables in Lesson 4.

Overall Category II Score (0, 1, 2, 3): 2

Unit Scoring Guide – Category II
Criteria A-G:
3: At least adequate evidence for all criteria in the category; extensive evidence for at least two criteria
2: Some evidence for all criteria in the category and adequate evidence for at least five criteria, including A
1: Adequate evidence for at least three criteria in the category
0: Adequate evidence for no more than two criteria in the category

Category III. Monitoring NGSS Student Progress

Score: 1

III.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.

Rating for Criterion III.A. Monitoring 3D Student Performances: Adequate

(None, Inadequate, Adequate, Extensive)

The reviewers found adequate evidence that the materials elicit direct, observable evidence of students using practices with core ideas and crosscutting concepts to make sense of phenomena and/or design solutions.

Direct, observable evidence is included in student journals, conversations/dialogue, and labs. There is evidence in Lessons 1-11 that is produced by students with varying levels of support where three-dimensional student performances are observable.

Examples of three-dimensional learning include:

- In the Student Science Journal (pages 6 and 7), students record and analyze their results as they carry out the sprouter investigation. This activity integrates the SEP of **Planning and Carrying out an Investigation** (*element: plan and conduct an investigation collaboratively …. the number of trials considered*), with the CCC of **Cause and Effect** to explain what caused the change in mass (*element: relationships are routinely identified to explain change).* The goal of this investigation is for students to understand DCI LS1.C (*element: plants acquire their materials for growth chiefly from air and water*).
- In the Student Science Journal (page 16), students reflect on the photosynthesis game and relate this game to experiments done on beans. This reflects learning of all elements of the CCC related to Energy and Matter, and connects to student understanding of the following DCIs LS1.C (the element pertaining to plants), LS2.A and LS2.B. In their writing on page 16, students are engaging in the SEP of constructing explanations *by using evidence (e.g. measurements, observations, patterns).*

Suggestions for Improvement

Consider incorporating a checklist from the Evidence Statements so teachers have more guidance for their observations.

III.B. Formative: Embeds formative assessment processes throughout that evaluate student learning to inform instruction.

Rating for Criterion III.B. Formative: Inadequate

(None, Inadequate, Adequate, Extensive)

The reviewers found inadequate evidence that the materials embed formative assessment processes throughout that evaluate student learning *and inform instruction*. The unit provides many checks for

understanding along the way; however, with true formative assessment, consideration is made for how the student data may influence instruction and there was little guidance in terms of altering a lesson for students depending on their answers. The reviewers did not see evidence of support for this process included in the unit.

Formative assessments would include activities within the Student Journal, which students write in during each lesson, and the pizza farm model with its ongoing refinements as students learn more. These can be reviewed and evaluated by the Teacher to adjust instruction or re-teaching and to determine if individual students are struggling with a concept.

The formative assessments include

- Energy Transfer and Cycling of Matter (pages 4, 5, 11, 13, 16, 18, 20);
- Patterns (page 15);
- Cause and Effect (page 17);
- Analyzing Data (page 6, 8, 10, 12);
- Argue from Evidence (page 11, 21);
- Construct Explanations (page 13, 20); and
- Obtain, Evaluate and Communicate (page 22, 25-27)

Finally, each lesson has either small group discussion and/or whole group discussion, during which there are multiple opportunities for the teacher to check for student understanding and adjust instruction if needed.

Suggestions for Improvement

While there are many opportunities to assess students formatively, this unit would be improved by increasing emphasis on the formative *process* by providing support for teachers in adjusting instruction based on student responses.

III.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.

Rating for Criterion III.C. Scoring Guidance: Inadequate

(None, Inadequate, Adequate, Extensive)

The reviewers found inadequate evidence that the include aligned rubrics and scoring guidelines that help the teacher interpret student performance for all three dimensions.

There is a student rubric for the Pizza Farm Model on page 4 of the Student Journal.
The pre/post summative assessment also includes a teacher answer key to help with scoring. However, guidance for teachers appears to simply have the “right” answers. The reviewers did not find evidence of qualitative descriptors for students’ responses to distinguish between student performances. While there is occasionally an exemplar student answer, there is not a rubric with ranges of student responses to help the teacher assess a variety of responses, or key criteria to use while assessing.

Suggestions for Improvement

Overall, teacher keys should include rubrics that allow for a range of responses, with clear guidance provided for teachers to interpret student progress, in relation to both the instructional materials as well as the targeted standards/dimensions/parts of dimensions/learning performance.

Consider including additional guidance either by scoring guide or rubric that would encourage students' self-assessment and reflection about their own progress similar to the one used in Lesson 1. Provide a new rubric or perhaps repeat the rubric from Lesson 1 for the final Pizza Farm Model in Lesson 8. Students may want input in developing the rubric.

More specifically, consider providing a scoring guide or rubric for the School Community Action Plan from Lesson 10 and for Lesson 11 Farm Design to Minimally Impact the Environment. If students are going to present to a group (class, audience, etc.), consider a way for them to receive feedback from the audience.

This unit covers some complex concepts. Provide greater guidance to teachers on how to help students who struggle with the more difficult ideas. For example, in lesson 11, there will be students who will struggle to calculate the kilocalories on their farms and there will be students who will struggle to even understand why they are calculating them.

III.D. Unbiased tasks/items: Assesses student proficiency using methods, vocabulary, representations, and examples that are accessible and unbiased for all students.

Rating for Criterion III.D. Unbiased Task/Items: Adequate

(None, Inadequate, Adequate, Extensive)

The reviewers found adequate evidence that the materials assess student proficiency using accessible and unbiased methods, vocabulary, representations, and examples.

The formative assessments, such as the tasks in the Student Science Journal, appear unbiased. The concepts assessed may be challenging for some students, but there are sufficient conversations, read-alouds, videos and hands-on activities that students should be able to complete these tasks. The language used in the Student Science Journal appears neutral and straightforward. The formative task of having students draw and revise a model of how matter and energy move through a pizza farm is also one which is accessible to all students once they know which farm plants and animals provide the ingredients for the pizza. Students in Grade 5 know pizza and most have probably enjoyed eating it.

Suggestions for Improvement

The pre/post assessments provided in the unit may not be accessible to struggling readers (including ELs) for a couple reasons:

- Section 1, Section 2 and Section 4 of the pre/post assessment all start with one or more paragraphs of background text.
- There may be some jargon or inaccessible words in the assessments (e.g., the term "trophic level" is used throughout Lesson 8 questioning but trophic is not a word emphasized in lesson 8 or Section 3 nor is listed in the glossary).

Because of this, the author may want to reconsider the reading load and vocabulary used in the pre/post assessment, as it may limit the accessibility of the assessment to all students.

III.E. Coherent Assessment system: Includes pre-, formative, summative, and self-assessment measures that assess three-dimensional learning.

Rating for Criterion III.E. Coherent Assessment System: Inadequate

(None, Inadequate, Adequate, Extensive)

The reviewers found inadequate evidence that the materials include pre-, formative, summative, and self-assessment measures that assess three-dimensional learning. While there are plenty of opportunities for different types of assessment, the reviewers found inadequate teacher support to know what student learning is being measured when and what to do with that information.

In addition to formative assessments, the unit has a pre-assessment and a summative post-assessment as well as well as extra practice for each of the 4 sections of the unit. Students conduct a self-assessment in Lesson 1 with the original pizza farm model. The reviewers did not find that teachers are consistently provided with a purpose and rationale for the how and why student learning is measured across the materials for all three dimensions of the intended learning goals.

Suggestions for Improvement

An important aspect of this criterion is that the assessments connect well to the targeted learning goals. Consider improving the alignment of the activity of Section 3 of the unit with the assessment. One suggestion is to give students pictures of different organisms and having students organize them into a food chain and then explain the flow of energy and cycling of matter in that food chain. The current assessment has students analyzing an energy pyramid, which was a topic not as fully explored as food chains.

III.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

Rating for Criterion III.F. Opportunity to learn: Adequate

(None, Inadequate, Adequate, Extensive)

The reviewers found adequate evidence that the materials provide multiple opportunities for students to demonstrate performance of practices connected with their understanding of DCIs and CCCs.

The teacher can provide feedback by evaluating responses in the Student Journal, by viewing the ongoing revisions to the model of the pizza farm, and by listening in on student conversations. Students' ideas can be revised and added on to throughout the lessons in the unit so that ideas can continue to be developed based on experiences within each lesson.

Suggestions for Improvement

Consider formalizing feedback so students understand that as their ideas grow and change so do their observable representations. You might consider using a checklist of features, or places within student journals where peers and teacher may offer comments or advancing questions that require students to consider new ideas.

Overall Category III Score (0, 1, 2, 3): 1

Unit Scoring Guide – Category III
Criteria A–F: **3**: At least adequate evidence for all criteria in the category; extensive evidence for at least one criterion **2**: Some evidence for all criteria in the category and adequate evidence for at least five criteria, including A **1**: Adequate evidence for at least three criteria in the category **0**: Adequate evidence for no more than two criteria in the category

Overall Score

Category I: NGSS 3D Design Score (0, 1, 2, 3): 2
Category II: NGSS Instructional Supports Score (0, 1, 2, 3): 2
Category III: Monitoring NGSS Student Progress Score (0, 1, 2, 3): 1
Total Score: 5
Overall Score (E, E/I, R, N): R

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

Overall Scoring Guide
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)*