Washoe County School District K-5 Science
2020 Instructional Materials Evaluation Rubric
(Certified Teaching Professional Form)

Category 1: Designed for Three-Dimensional Learning

Criterion 1A: Phenomena and Problems

Instructional materials focus on students making sense of phenomena or designing solutions to problems which drives student learning.

- Students are engaged with phenomena or problems that can be explained or solved through the application of the three-dimensions.
- A good phenomenon builds on everyday student experiences and targets grade appropriate learning goals.
- Anchoring, investigative and everyday phenomena may be present.
- Engineering lessons require students to use elements of the science core ideas together with elements of core ideas from engineering design to solve problems.

Less of this:	**More** of this:
Phenomena are just for the initial hook.	Phenomena drives the learning.
Phenomena are fun or flashy to engage students.	Phenomena that builds on everyday experiences supports engagement.
Phenomena are brought in after students develop the science ideas so they can apply what they learned.	The development of science ideas is anchored in investigations of phenomena.
Engineering problems are unrelated to the science learning.	Engineering involves designing solutions to problems that arise from phenomena.

Examples of Evidence:

- ◊ Photographs of trash washed up on a beach that leads into a unit on waves in 4th grade physical science unit. (A first-hand experience, video, photograph or data set to start a learning sequence that becomes the "why" for further study grounded in everyday student experiences.)
- ◊ A time lapse video of a badger decomposing is shown to start a life science unit on matter and energy in ecosystems. Students return to the video throughout to explain what is happening.
- ◊ Garbage from the lunchroom is examined to start a unit on matter and how it changes in the 5th grade physical science unit.
- ◊ 3rd grade students explore balloons, aluminum cans, styrofoam beads, and transparent tape to make observations and generate questions about static electricity in the physical science unit, lesson 3.
- ◊ Students address the problem of communicating at a distance without sound following a study of light in the 1st grade physical science unit.

Specific Evidence from Materials
According to the Guide to Evaluation Document; there is a video presented phenonmon and storyline at the beginning of each unit. The phenomenon guides the student to oberve, connect, investigate, make sense, engineer, and complete

two performance assessments for each unit, while imbedding CCCs, SEPs, and DCIs, across multiple science domains.
Anchoring Phenomena examples are "The Appalachian Mountains used to be tall and pointy, but now they are low and rounded" from the Earth's Changing Surface unit and "All animals have eyes, but the location of the eyes are different depending on the animal" from the Animals and Plants unit. Each lesson within the unit has a specific phenomenon and they progress each lesson to make connections towards the anchoring, or culminating phenonmena. For example, in the Animals and Plants unit this is the progression of lesson specific phenomena that is included in the "Observing Phenomena" section of each lesson.

Lesson 1: "Palm trees can remain standing during strong winds."

Lesson 2: "Some plants, like cacti, have sharp spines."

Lesson 3: "Dandelion seeds blow away in the wind."

Lesson 4: "Plants move their leaves toward the sun."

Lesson 5: "Snails have mouths, but they aren't the same as people's mouths."

Lesson 6: "Snakes move without legs."

Lesson 7: "Peacocks show off their feathers around peahens."

Lesson 8: "Owls have huge eyes"

Lesson 9: "Every year, sandhill cranes fly to New Mexico."

Performance Assessment: "All animals have eyes, but the location of the eyes are different depending on the animal." Which is the anchoring phenomenon.

Engineering is present in each unit, the Energy unit has students designing a bike protection system, in the Earth science unit, students design earthquake proof structures, with evidence of opportunities to test, re-design, and re-build, as well as develop a natural hazard plan, the waves unit has students designing a new method of coded communication, and the plants and animals unit has students design a creature with specific structures for survival.

To what extent do the materials support Criterion 1A? Include your reasoning.
The phenomena for each unit leads to the engineering and/or performance assessment for each unit. The phenomena for each lesson build knowledge to apply a broader, deeper understanding to the performance assessment/anchoring phenomenon. The instructional design allows for high engagement for students and students are always brought back to the phenomena at the conclusion of each lesson. Students are active in real world engineering scenarios while bridging their science content knowledge with the engineering and science practices. There is a variety of types of engineering such as structural (earthquake proof structures), systems (communication system), and electrical (circuit system).

Evaluator: 31 Grade Level:4th Grade Program: TCI Bring Science Alive

Criterion 1B: Integrating the Three-Dimensions

Instructional materials integrate elements of the Science and Engineering Practices, Crosscutting Concepts and Disciplinary Core Ideas.

- Students develop and use multiple grade-appropriate elements of each dimension.
- The dimensions are integrated to work together and are not taught in isolation.
- Learning experiences integrate multiple different pairings of the dimensions to build understanding of the targeted performance expectations.
- Engineering is integrated with at least once per domain of science.

Less of this:	**More** of this:
Students only engage in a single practice element in a lesson.	The lesson helps students use and develop multiple practice elements.
Lessons teach the dimensions separately or only address them at the general level.	Lessons integrate grade-appropriate elements for each dimension.
Engineering lessons focus on trial and error activities that don't require science or engineering knowledge.	Grade-appropriate elements of engineering design and science core ideas are integrated with the other dimensions.
Engineering consists of challenges or step-by-step directions to build something.	Engineering is integrated into the grade-appropriate science core ideas and use explanations of phenomena to design solutions.

Examples of Evidence:

- ◊ 4th grade students conduct an investigation using fair tests in which variables are controlled and the number of trials considered, including collecting measurements and representing data in tables, with balls and ramps to determine cause and effect relationships of speed and energy in unit 2 lesson 4.
- ◊ Students ask questions about waves moving objects and collaboratively investigate how to make different looking waves in water and analyze how these waves affect a floating object in the physical science unit.
- ◊ 3rd grade students generate, test and refine solutions to keep two moving objects from touching each other by applying ideas learned about magnets in lesson 9.
- ◊ With teacher guidance, kindergarten students conduct an investigation with peers to compare the effects of different directions of pushes and pulls on playground balls, student chairs and erasers on different surfaces in the physical science unit, lesson 3.

Specific Evidence from Materials
Students in the animal and plants unit engage in 1 engineering standard, 2 life science standards, 1 physical science standard, reading, writing, speaking and listening under ELA standard, as well as geometry math standard. This unit includes 7 out of 8 of the SEPs for the entire unit and addresses 1-3 components of each SEP, and incorporates 3 of the 7 CCCs, this is found in the Unit Connections Document for the Animal and Plants unit. The SEPs and CCCs are paired numerous times throughout the year long curriculum and are paired together in different combinations for different units. Each unit has the students working with the SEP and CCC concepts or skills throughout the unit to build towards the final performance assessment task. This is evidenced in the Animal and Plants unit where students use SEP (Developing

and Using Models) in lessons 4, 5, 8, 9 and the performance assessment. This is characteristic of other SEPs for other lessons and units.

To what extent do the materials support Criterion 1B? Include your reasoning.
Students are engaged in meaningful, engaging, diverse, and grade level learning experiences that allow for multiple DCI, CCC, and SEP components for each unit and even for each lesson. They work towards an engineering task related to the phenomena of each unit throughout the unit, the tasks are not isolated but imbedded.

Criterion 1C: Coherence

Instructional materials help students develop increasingly sophisticated understandings within and across grade-levels.

- Lessons fit together to target a set of performance expectations with multiple opportunities for students to revise understandings over time.
- Instructional materials make connections between lessons, units and grade levels.
- Lessons build on students' prior learning in all three dimensions.
- Students engage in learning experiences with explicit connections to other science disciplines and other subjects with intention.

Less of this:	**More** of this:
Lessons are unrelated.	Lessons are presented in a logical sequence to develop understandings.
Lessons build on prior learning but only for the DCIs.	Lessons work together with students' foundational knowledge and practice from prior lessons and grade levels.
Science domains are taught in isolation.	When appropriate, science domains are integrated to show connections.
Other subjects, when included, are not intentionally chosen to support grade-level standards.	Grade-level appropriate standards from ELA, math or other subject areas are integrated with science learning.

Examples of Evidence:

- ◊ In the first unit, students address the physical science standards around the phenomena of garbage and partially address a life science standard related to decomposers. In the second unit on ecosystems, students extend and apply their understanding of decomposers which leads to an engineering problem about materials such as plastics that do not decompose.
- ◊ 5th grade students are investigating water sources around the Earth and make connections to properties of matter in both the physical science and earth science units and prior learning about weather and climate from 3rd grade.
- ◊ 2nd grade students plan and conduct an investigation with water and earth materials as a whole class in one lesson and then in the next lesson students work with a small group to plan and conduct another investigation with wind and earth materials to further learning of core ideas and practices.
- ◊ Students apply ELA learning to write a set of directions for conducting an investigation in the earth science unit, lesson 6.
- ◊ Students use line plots to analyze climate data in grade 3, unit 4.

Specific Evidence from Materials
Lessons in unit 1 of Animals and Plants progress through stages of learning where students are continually building their understanding of animal and plant structures that help animals survive, grow, reproduce, and determine their behavior. For example, in this unit the lessons progress from lesson 1; learning about the external structures of plants that give them their form, to the structure of plants for their protection, to dissecting a flower to understand reproduction, to understanding how plants respond to their environments, then to animals internal system structures that aid in survival and growth, pill bug observations of structures that support protection and movement, connectinc animal

reproduction to different animals around the world, building a model of how eyes see, modeling animals using senses to react to their environment, and ultimately designing a new creature that incorporates this knowledge of structures and their functions. These lessons connect to other lessons in a sequential order and connect to physical science through the concept of reflection for vision.
Students engage in reading, writing, speaking and listening tasks throughout the unit, they engage in engineering in 2 lessons, and they use 1 math standard for the unit. This is common in other units as well, in the Earth Changes unit there are multiple ELA standards and 3 math practices, in the Energy unit again there are multipe ELA standards, 1 content math standard, and 2 math practices, and finally in the waves unit a multitude of ELA standars and 3 math practices.

To what extent do the materials support Criterion 1C? Include your reasoning.
The lessons for each unit incorporate ELA, math, engineering, CCCs, SEPs, and content specific DCIs that include crossover into one other domain. The lessons are logically sequenced so that, in the case of the Animal and Plant unit, students begin understanding plant structures and function related to survival, reproduction, and reactions to their environment and them move towards more comples understandings of these concepts related to animals. The lessons build foundational knowledge through investigations, observations, and inquiry to guide students toward these understandings with good questioning.

Category 2: Instructional Supports

Criterion 2A: Assessing the Three-Dimensions

Instructional materials support monitoring student progress in all three dimensions.

- Multiple and varied assessments allow students to demonstrate learning in all three dimensions including application of knowledge in performance tasks.
- Formative assessments, including teacher, self and peer assessments, are embedded throughout to inform instruction.
- Assessments are unbiased and elicit direct, observable evidence from all students.
- A phenomena or problem drives tasks, and information from the task is required to complete it.
- Rubrics and scoring guidelines are provided for interpreting student performance including sample student responses

Less of this:	**More** of this:
Checks for understanding elicit only a few student responses or rely primarily on group projects.	Individual student artifacts are used to measure student understanding of each dimension.
Only summative assessments that measure the end point of understanding are provided.	Formative assessments provide feedback to adjust instruction and inform students of their progress.
Assessments are primarily rote memorization of facts and terminology.	Assessments reflect application of all three dimensions including tasks that are driven by phenomena or problems.
Only multiple-choice tests are given.	Multiple measures and types of assessment are used throughout.

Examples of Evidence:

- ◊ As students are engaged in a performance task in unit 3, lesson 2, there are indicators for teachers to look for and information about possible responses. This information is embedded in the lesson.
- ◊ In unit 1, there are two performance assessments, peer feedback throughout, exits slips, a summative assessment, and a prewrite.
- ◊ Individual student learning is assessed using written work that answers the driving question of the unit. (Earth Science, p. 76)

Specific Evidence from Materials
Formative assessments are embedded in the science notebook/science journal. There are 3 different formative assessments for each unit: These examples come from lesson 1 of the Animals and Plant unit. 1) Wrap up: student self assessment on their understanding of DCI, CCC, and/or SEP 2) Making Sense of the Phenomenon: has students engage in a claims, evidence, and reasoning process that assess their understanding of the basic concept related to the phenomenon of the lesson 3) Show what you know: Again assesses their basic understanding of the content but asking students to find the correct evidence to the claim stated. There are Checks for Understanding formative assessments for the suggested reading that can be utilized. There are answer keys available for these assessment features.

There is the final performance assessments and engineering tasks where students then apply their knowledge and skills into meaningful ways related to phenomena. There are rubrics for grading the performance assessments that address DCI,SEP, and CCC for the task.

To what extent do the materials support Criterion 2A? Include your reasoning.
Students have several opportunities to summarize the big ideas to be understood and for teachers to evaluate their understanding of these ideas. There are multiple formative assessments for each lesson, along with reading comprehension tools, science notebook/journal prompts, and student discussion. The self-assessment and rubrics for the performance assessments do have a focus on student performance for more than just the science content. The types of assessments in the science notebook/science journal vary, but do have a strong pattern of students providing evidence to support their understanding.

Criterion 2B: Instructional Experiences

Instructional materials support equitable access to science knowledge and practice for all students.

- Students engage with direct (preferably first-hand), shared experiences that are relevant and authentic, serve as the basis for learning and meet the developmental needs of elementary students.
- Students' questions, prior experiences and diverse backgrounds related to the phenomenon or problem drive learning.
- Materials provide an opportunity to learn by allowing for the development of scientific understandings over time using multiple modalities.
- Materials provide opportunities for students to make connections to and explore the natural world outside the classroom.

Less of this:	**More** of this:
The lesson focuses on a topic that some students have experienced.	Direct experiences in the classroom provide access and equity for all students.
Student questions and prior experiences are not connected to the learning.	Materials provide supports for connecting students' own questions to the targeted learning.
Students read about what others have done.	Students learn through concrete experiences.
Only one or two modalities are used.	Multiple modalities are used throughout each instructional segment.

Examples of Evidence:

- ◊ Students develop physical models of a landfill as open and closed systems to observe during the 5th grade garbage unit.
- ◊ Students identify components of garbage disposal in their homes and communities which connects the phenomena that started the unit.
- ◊ Students conduct a first-hand investigation of erosion and deposition using a stream table, observe time-lapse videos of landslides, engage in a virtual investigation, read accounts of earth changes by wind and record changes to the playground after a snow event in the 4th grade earth science unit.
- ◊ Students raise trout from eggs in the classroom and make observations over time as part of their study of traits in the life science unit.

Specific Evidence from Materials
Students engage in investigations, observations, simulations, and engineering tasks in all units. For the Animal and Plants unit, students conduct an investigation on plant structure using celery, the dissect flowers to understand plant reproduction, they observe pill bugs to conclude about their structures for behavior and protection, they build a model for vision, watch videos and simulations, read texts, and they design a new creature that has specific structures and functions. Learning is further facilitated by using a variety of kinesthic strategies such as in the Animal and Plant unit, having students act out with paper leaves and yarn roots the function and behavior of plants (lesson 4). Students engage in opportunities to organize information to apply their knowledge and play games where they shout out different actions for different types of plants (lesson 4).

Evaluator: 31 Grade Level:4th Grade Program: TCI Bring Science Alive

To what extent do the materials support Criterion 2B? Include your reasoning.
There are multiple engaging opportunities for students to engage in learning; there are games, sorts, graphic organizers, reading of texts, investigations/experiments, videos, simulations, and engineering and testing throughout each unit. Students have opportunities to engage in kinesthetic, verbal, visual, and auditory activities.

Evaluator: 31 Grade Level:4th Grade Program: TCI Bring Science Alive

Criterion 2C: Student Sense-making

Instructional materials support equitable access to science knowledge and practice for all students.

- Materials support student sense-making at both an individual and group level.
- Classroom discourse focuses on expressing and clarifying student reasoning with opportunities for students to share ideas and feedback with each other that supports the iterative and collaborative co-construction of explanations.
- Materials include supports for oral and written language processing to involve students in scientific discourse for sense-making including a language-in-use approach.

Less of this:	**More** of this:
The teacher tells students what they need to know.	Students figure out explanations through classroom discourse with each other.
The teacher calls on a few students to share reasoning.	All students have the opportunity to share their thinking orally or in writing.
The focus is only on getting the "right" answer.	Sense-making begins with initial student ideas that progress in sophistication.
Vocabulary is front-loaded. All students are provided with sentence frames.	Specialized vocabulary is embedded in the instructional sequence with multiple opportunities to use and development over time. Writing supports are differentiated.

Examples of Evidence:

- ◊ 5th grade students develop models of how scents travel that are refined over the course of a three weeks using a combination of visual and written language providing multiple opportunities to develop precise vocabulary in the physical science unit.
- ◊ 3rd grade students answer questions in their notebook individually using pictures and words to explain their initial ideas about how static electricity works and have the opportunity to revise this after discussing with a peer and the whole class in the physical science unit.
- ◊ The teacher facilitates a class discussion using a word wall where kindergarten students share observations with a shoulder partner and the whole group about the kinds of things in their homes to figure out that the things we need come from nature.
- ◊ Suggested sentence frames are included to support oral and written responses when needed with the goal of independence.

Specific Evidence from Materials
There are many opportunities and suggested class discussion questions. For example in the Animals and Plant unit, in Lesson 4, questions for class discourse are present in "Observing Phenomena", extensive questioning in "Setting Up and Reviewing Plant Responses", and "Wrap Up" sections. Peer discourse opportunities are present, for example in the same unit in lesson 2, students participate in a station rotation with peers to discuss solutions to protect plants. Individual sense making opportunities are present in "Observing Phenonmena", "playing the plant says game", "debriefing the plant says game", "describing how plants respond", "Making Sense of the Phenomena", "vocabulary", and "show what you know sections". These are journal exercises that include drawing, reading,

referencing, answer selection, and/or writing. There are writing support suggestions and the sequence of sense making allows for students to work in small steps to come to conclusions. Vocabulary is introduced in beginning stages of lesson through context, students are then given an opportunity to formalize their understanding of the word in the vocabulary section, for example “gravity” is used in context of the game Plant Says, as a direction, students are directed to write the word down in their notebook, and then in the vocabulary section they are to match the words to their definitions.

To what extent do the materials support Criterion 2C? Include your reasoning.
Students engage in contextual vocabulary integration, multiple modaility sense making, and multiple outlets for students to process and share their understandings. Students are given time to discuss with the class or peers, record understandings in their journal/notebook, and draw conclusions through activities, games, questioning, experiments/investigations, and/or engineering tasks.

Criterion 2D: Teacher Supports

Instructional materials support teacher planning and instruction.

- Materials include background knowledge in both science content and pedagogy and student preconceptions.
- Materials have clear and concise instructional directions and connections to the standards.
- Materials provide guidance to support differentiated instruction, extra support and extensions at the appropriate level for a broad range of learners.
- Materials include professional learning and additional instructional planning resources.
- Materials have supports for families to extend learning and offers suggestions for how to help their student(s) at home.

Examples of Evidence:

- ◊ Information prior to lessons gives teachers things to except that students may already know in unit 1 p.12 in addition to how their understandings will build.
- ◊ 1st grade students have a choice to investigate different variables related to shadows, and suggestions are included as well as extensions to do at home. (Light unit, p. 40)
- ◊ The assessments include recommendations for additional supports when students don't meet expectations. "Students may struggle to articulate that scientists look back at the data they collect to look for patterns and to draw conclusions about phenomena. One way to support them in this thinking might be to share an anecdote such as, "When I was growing up, my mom used to measure my height by marking it on the wall in the pantry. When I look back at those marks, I notice patterns, like that I grew faster between the ages of 5 and 8 than I did when I was older."" (p.14)
- ◊ Students make observations of the sky with their families, looking for patterns over time. Families are provided with background information on how to record observations and what patterns to expect.

Specific Evidence from Materials
A science background section is present for every unit; with a variety of informational sections. Such as in lesson 4 of Animal and Plant unit, there is background information on the student text, science concepts, investigation, and vocabulary. The background section summarizes information that will be taught in the lesson. The lesson progression section gives information about preconceptions for CCC, SEPs, and DCI for that lesson both from past grades and/or past units/lessons. Materiasl are organized clearly by unit, lesson, and stages of the lesson. Stages of the lessons are similarly labled and organized in a sequential manner with all resources in that area. Directions are clear because it is the same directions used for the students through the slides. The online resources are easy to navigate between lessons with drop down menus and labels for lesson sections that can be expanded. Differentiation suggestions are present for each lesson; they included suggestions for students learning English, need more advanced work, or struggling learners. As evidenced in the Animal and Plant unit, lesson 3, there are support suggestions for Students with special Needs to provide options for modifications on the claims and evidence portion, advanced learners can develop a 3-D model, and EL supports are to include a word bank. In the same unit, lesson 1, supports

included sentence frames, video scripts, note taking strategies, and for advanced learnings to draw a model with their reasoning. Additional resources are also presented in the Enhanced Learning tab, such as a botanical garden website and a simulation game.
Extensions that are offered in a clear and organized format, but do come as part of the suggested learning. There is a fast track option or a fast track plus extension option. This plan offers extensions already sequenced into the lesson and include activities such as in lesson 1 of the Animals and Plant unit, 3 additional videos and discussions, vocabulary, and show what you know.
Additional professional development is present in the Getting Started and professional learning section locatd from the sidebar under program and then support. Optional PD includes tutorials, webinars, Methods book PDF, and a searchable database. These resources are on classroom management, instructional strategies, organization, and specific guidance to using the program.
Found on the sidebar, there are additional resources such as pacing guides, practices and strategies documents, Engineering Design toolkit, Claim Evidence Reasonin Planner and much more offered under Reference on the side bar. There is also numerous specific resources available for further content learning through the enhancing learning tab of each lesson.
In the blended learning section of each lesson it provides information if the lessons and materials are suitable for home learning, such as distance learning. On the sidebar under program, content, there is a toolbar at the top that provides some reference materials for Distance Learning Support. Family newsletters or home extension activities were not found.

To what extent do the materials support Criterion 2D? Include your reasoning.
Background knowledge information is adequaute and additional resources for extensions, enhancement, and professional development are extensive. Differntiation suggestions are specific to each lesson and are outside the “standard repertoire” of modifications; the enrichment activities for the advanced learners allows for deeper understanding, rather than busy work. The format of the website, lessons, resources, and instructions are straightforward, organized, and easy to use.

Evaluator: 31 Grade Level:4th Grade Program: TCI Bring Science Alive

Category 3: Student Materials

Criterion 3A: Program Design
Instructional materials represent a comprehensive K-5 core program.

- Materials provide instruction that correlates to our recommended instructional minutes for science.
- Materials are available in both English and Spanish.
- Graphic organizers and templates for science notebooks are included.
- Teacher and student materials have resources both in print and online.
- Multimedia supports are included such as videos, tutorials and simulations and when appropriate reflect the diversity of our students and society in a culturally responsive manner including different genders and sexual orientations, from many cultures and nations, both contemporary and historical.
- Technology options are appropriate for both classroom and home use possibly including translation capabilities.

Examples of Evidence:

- ◊ There are four units, each representing nine weeks of instruction at 180 minutes a week. This is short of our recommended minutes of 240 minutes a week for 5th grade.
- ◊ There are 132 60-min lessons for the whole year. This correlates to our recommended instructional minutes of 220 minutes per week for grades K-2. (3-4 60-min lessons per week)

Specific Evidence from Materials
Two unit are approximately 900 minutes and two units are approximately 700 minutes, totaling 3200 minutes total time to teach lessons according the pacing guide document found under the reference tab on the sidebar. 3200 annual minutes of lesson time averages to 90 minutes per week over 36 weeks. This document also cites "You may need 1-3 additional days per lesson for independent student work including reading the Student Text, completing the Interactive Student Notebooks, playing the Lesson Games, and completing the Assessment." This means that there will be additional science time needed for weekly instruction. Teacher and Student materials are available in Spanish and English, including the student textbook/workbook (science notebook/science journal). Graphic organizers and student journals are included they serve both as the students' text that can be written and annotated in, they include investigations, questions, photos, notes, vocabulary, assessments, and reading strategies all in the same book. It is a one-stop-shop and little to no copying is required of the teacher. Student and teacher resources area available online and in print. The online resources for the teacher is easy to use and can be assigned to students. Teachers can personalize their assessments, make notes, and access everything that is in print. The students have digital access to an interactive notebook that would be useful for 1:1 classrooms or distance learning scenarios. There are many multimedia resources such as presentations, videos, website links, simulations,

and interactive questions/tasks such as vocabulary matching that allows for the students to check their answers for each lesson. The resources online allow students to use these resources in a distance learning model as well as the teacher to use the resources for whole class, small group, or individual students. The teacher has the option to assign assignments to students in their class.

To what extent do the materials support Criterion 3A? Include your reasoning.
This program has some great resources for both in person and distance learning. The lessons are engaging in both scenarios and the digital resources are good quality, easy to access, and very clearly organized for both the student and the teacher. Student can follow the sequential order of the tasks and there are frequent prompts, directions, and answer boxes within in each section to clearly determine if all tasks were completed. The instructional and student independent work time combined would likely meet or almost meet the recommended time for science. There is a lot of flexibility with the program which is beneficial since there are times when science gets reduced such as the beginning and end of the year as well as during testing season.

Evaluator: 31 Grade Level:4th Grade Program: TCI Bring Science Alive

Criterion 3B: Science Equipment

Instructional materials include hands-on materials and equipment that support three-dimensional learning.

- Enough materials are included to allow students to do the investigations themselves.
- Materials are of a quality that will last through many uses.
- Materials include the tools necessary to make observations and measurements and conduct investigations.

Examples of Evidence:

◊ There are enough thermometers, graduated cylinders, balances, magnifying glasses and measuring tapes for a whole class to use in small groups.

◊ Everything is included to engage in the lessons except for things that would already be found in the classroom like tape and colored pencils.

Specific Evidence from Materials
Materials seem more common for small groups such as items are in quantities of 6, such as cd cases and jars. Many of the investigations are "everyday" items in the classroom that they teacher would need to purchase or supply, such as with the celery experiment in lesson 1 of Animal and Plant unit. There are placards that are laminated, brief texts with a large photograph, there are 2 of each. There are also placards with only photos and labeled fossil a, fossil b, etc. The student journals are fairly sturdy and are separated into 4 journals for each of the 4 units, so they would last well for the duration of each unit. The teacher manual is on very thin paper and does not appear to be sturdy, even the laminated cover is flimsy. There are no tabs in the teacher manual and there is one teacher manual for all units; it seems easier to follow with clear sections such as background, investigation, wrap up, etc. Clear plastic tubs with packing list on paper are on the inside. The packing list has photos of materials also, nothing mentioned on outside. Containers open from top, they are only labeled by unit. Most Items are bagged or boxed, others are loose in crate. The tubs are organized by materials, and the tub lists which units these materials apply to, there are 3 tubs for all hands on materials. Materials listed online for each lesson come with safety information and also a list of which items are supplied and where to find these items in the tub with box number, bin number, and bag title, as well as which items are teacher supplied.

To what extent do the materials support Criterion 3B? Include your reasoning.
The teacher and student book materials are easy to use and access. The hands on materials are easier to access because the packing list has photos so it is easier to find the items. The tubs are

labeled by which materials are in the tub and which materials go with which unit. There are fewer tubs than other programs, but this is because much of the materials are teacher supplied.

Evaluator: 31 Grade Level:4th Grade Program: TCI Bring Science Alive

Criterion 3C: Reading Materials

Instructional materials include grade-appropriate texts that support three-dimensional learning.

- A range of text types and genres, both print and online, are embedded in learning experiences.
- Texts support context-specific academic vocabulary.
- Materials reflect the diversity of our students and society in a culturally responsive manner including different genders and sexual orientations, from many cultures and nations, both contemporary and historical.
- Materials include supports for reading comprehension for a variety of student needs including high-quality questions.

Examples of Evidence:

- ◊ Texts include an interview of Sylvia Earle and profiles of Chien Shiung Wu and Benjamin Banneker. These highlight the connections to the science students are learning. Pictures of scientists working in the field represent the diversity of our students.
- ◊ Cultural myths about the sun and stars are included in the earth/space science unit.
- ◊ Vocabulary is highlighted in the reading that follows a concrete experience where the vocabulary is first introduced.

Specific Evidence from Materials
In the sidebar on the online program, under the reference tab there are two additional text library options labeled biography and career profile. The media library and glossary resources are also accessed here. The biography and career profile texts are for many texts on different scientists or engineers and their work, and the career profiles are texts on the roles of specific types of engineers and scientists. According to the Guide to Evaluation document, the biography bank has texts that vary on ethnicities, gender, and sexual orientation. This document also refers to "Reading Furthers dive into case studies of diverse groups and individuals who have contributed to science" The document states that there are "Connecting to Your Life prompts suggest ways teachers can connect to the homes and cultures of students." According to their Culturally Responsive Classroom Document, they state that their program is inclusive, cooperative, diverse, and offers personal connections. The program's lesson support personal connections through hands on investigations, observations, and discussions. The texts are supportive and relevant to each lesson's content and include many strategies, graphic organizers, vocabulary, and questions that support the comprehension of the texts. The suggested supports include literacy strategies or supports to help struggling readers. The science notebook/science journal have imbedded text connections for understanding and include claims, evidence, and reasoning writing to support evidence based learning. The questions in the science notebook/science journal are high quality questions that allow for the student to make sense while also providing thought provoking

questions, such as in the Earth Chaneges units, students are given a photograph of muddy water after a rain storm and are asked to explain how the water causes erosion and weathering. This is a complex question that allows for a lot of information the students have learned to be connected and explained. Or they are given two diagrams and asked to explain the changes between the first and second diagrams. Students are asked to complete tasks or answer questions according to high DOK levels, such as describe, explain, analyze, and justify.
The texts provided in the student journal are primarily informational texts about specific content related to the lessons. The biographies and career profiles are also informational texts. No evidence of narrative texts were found. The texts cover many topics and are bountiful for each lesson. Lesson 4 of the Animal and Plant unit has 4 sections on plants and after each section there are graphic organzers and questions that support sense making.

To what extent do the materials support Criterion 1A? Include your reasoning.
The reading materials are quality informational texts that relevant to each lesson and provide quality pictorial and vocabulary support. These texts are embedded into the lessons and add to the understanding of the concepts. The texts cover many topics and are bountiful for each lesson. Lesson 4 of the Animal and Plant unit has 4 sections on plants and after each section there are graphic organzers and questions that support sense making. The texts are able to be annotated directly in the student copy and already copied and bound and student ready. There are good comprehension strategies to solidify student sense making and require evidence based writing. There is a diverse selection of careers and biographies that include diverse populations.

Evaluator: 31 Grade Level:4th Grade Program: TCI Bring Science Alive

Referenced, adapted and formatted from the following documents:

Achieve, Inc. (2016). EQuIP Rubric, Version 3.0.

Achieve, Inc. (2018). Science Task Prescreen.

Achieve, Inc. (2016). Using Phenomena in NGSS-Designed Lessons and Units.

Achieve, Inc. (2017). Primary Evaluation of Essential Criteria (PEEC) for Next Generation Science Standards Instructional Materials Design.

Brennan et al. (2017) *Priority Features of NGSS-Aligned Instructional Materials: Recommendations for Publishers, Reviewers and Educators* [White paper].

BSCS (2017). Guidelines for the Evaluation of Instructional Materials in Science.

BSCS Science Learning (2018). NextGen TIME

MacDonald et al. (2020). *Design Principles for Engaging Multilingual Learners in Three-Dimensional Science* Wisconsin Center for Education Research (WCER) Working Paper No. 2020-1. https://wcer.wisc.edu/docs/working-papers/WCER_Working_Paper_No_2020_1.pdf

National Academies of Sciences, Engineering, and Medicine (NASEM) (2017). *Seeing Students Learn Science: Integrating Assessment and Instruction in the Classroom.* Washington, DC: The National Academies Press.

National Research Council (NRC) (2012). *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas.* Washington, DC: The National Academies Press.

NGSS Lead States (2013). *Next Generation Science Standards: For States, By States.* Washington, DC: The National Academies Press.

Nolan, C. (2015). *Getting their hands dirty: Engaging learners in authentic science practices outside the classroom* (Practice Brief No. 20). STEM Teaching Tools.

Washoe County School District Needs Evaluation

Washoe County School District. (2020). Request for Instructional Material Submission RFP 2020A.