Washoe County School District K-5 Science
2020 Instructional Materials Evaluation Rubric
(Community Members, Administrators and Families 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.

- A good phenomenon builds on everyday student experiences and targets grade appropriate learning goals.
- Engineering design solutions are tied to grade specific science ideas.

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 bucket of water is physically explored by students and leads to exploration of properties of matter in 2nd grade.
- ◊ 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
Students explore how things move in Investigation 4 part 1 by playing with a wheeled object. Students explore how to increase the speed of an object rolling down a slope in Investigation 4 part 2.

To what extent do the materials support Criterion 1A? Include your reasoning.
The teachers manual describes phenomena that students will explore; however, the lessons do not appear to provide students with opportunities to observe or questions puzzling patterns and events; rather the specific questions are provided to them, and in some cases the questions and slides appear to provide an answer (e.g., slide 2 investigation 4 part 2, "what could we do to change the speed of the ball rolling down a slope, the arrow points up indicates that students would only need to increase the slope.

Criterion 1B: Integrating the Three-Dimensions

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

- Students are doing science as scientists would to explain the natural and human-built world.
- Materials use an inquiry-based and problem-solving approach where students engage in the practices of science and engineering.
- Science and engineering are not presented in a linear manner; they are messy.

Examples of Evidence:

- ◊ Students conduct an investigation, including collecting data, with balls and ramps to determine cause and effect relationships of speed and energy in unit 2 lesson 4.
- ◊ Students investigate how to make different looking waves in water and how these waves affect a floating object in the 4th grade 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.

Specific Evidence from Materials
Students explore collisions in Investigation 4 part 2. Students explore how different balls will roll down a ramp (Investigation 4 part 3).

To what extent do the materials support Criterion 1B? Include your reasoning.
Students are provided opportunities to conduct investigations, but it is unclear what practices students are engaging in outside of “carrying out an investigation” or writing/drawing an explanation.

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Criterion 1C: Coherence

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

- Materials make connections between lessons, units and grade levels.
- Students engage in learning experiences with explicit connections to other science disciplines and other subjects with intention.

Examples of Evidence:

◊ 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.

◊ Students apply ELA learning to write a set of directions for conducting an investigation in the earth science unit, lesson 6.

◊ Line plots are used to analyze data in unit 4 at the 3rd grade level.

Specific Evidence from Materials
Students are tasked with providing written or drawn explanations for how objects roll down a hill outside (Investigation 4, part 3).

To what extent do the materials support Criterion 1C? Include your reasoning.
There are no clear connections made to other units or science disciplines; and there does not appear to be an overarching question (e.g., driving question) that guides the components of Investivation 4. However, there are connections to ELA/Common Core, such as when students are tasked with writing explanations.

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.

Examples of Evidence:

◊ As students are engaged in a performance task, there are indicators for teachers to look for and information about possible responses and next steps. 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
Assessments (checklists) require teachers to directly observe how students use their knowledge of the DCIs, SEPs, and CCCs. Rubrics are provided in the physical materials.

To what extent do the materials support Criterion 2A? Include your reasoning.
There are multiple assessment checkpoints, but they do not appear to be three-dimensional. For example, teacher materials include checklists for checking off how students perform separately on their understanding of the DCI, SEPs, and CCCs.

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.

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 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 conduct investigations about how objects roll on the playground (Motion, Investigation 4, Part 3), which allows them ot make connections to motion that happens in the playground.

To what extent do the materials support Criterion 2B? Include your reasoning.
Materials is the major focus of the unit, however, materials is not related to the Kindergarten DCIs.

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.

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 a magnet 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
Vocabulary is introduced before students are given the opportunity to explore the concepts. For example, “evaporate” is introduced before students explore what that concept is. Students are encouraged to draw what caused objects to roll on the playground, and to use their “word wall” to label their drawings (Investigation 4, Lesson 3).

To what extent do the materials support Criterion 2C? Include your reasoning.
Vocabulary is introduced before students have an opportunity to explore concepts. For example, in Investigation 1, part 6, students are asked what happened to water that was on the sawdust and shavings on the paper plate. And then the same slide tells students that the water “dries up” or “evaporates”. However, they are encouraged to use a word wall and to use the language of scientists.

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 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
Each lesson contains backgound information on the science content, and is detailed. For example, pages 268-273 contains information about motion and how to teach children about motion. Each lesson includes a letter that can be sent home that asks families to help their students collect materials relevant to the science activities they will be doing, and each is available in English and in Spanish. Each lesson contains a "home/school connection" that gives families opprotunities to do a related activity with their child. It is available in English and in Spanish. Slides embedded at the end of each powerpoint presentation includes teacher notes and step-by-step instructions for implementing the lessons (Slides for Investigation 4, Lesson 3). It also includes ideas for when to have students work invididually and in groups.

To what extent do the materials support Criterion 2D? Include your reasoning.
The materials include opportunities to include families in the science learning by collecting materials around the home or by providing at home activities. However, it is possible that collecting materials around the home could be an equity issue. Teachesr are provided with

extensive content knowledge to support their learning about the topics, and slides include suggestions for differentiation and for participant structures.

Evaluator number: 12 Grade Level: K Program: FOSS

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
Texts are provided in English and in Spanish. Materials include graphic organizers for students in their notebooks, and notebooks are available in English and in Spanish. Characters in texts are diverse. Techology options for use in the classroom appears to be outdated (rollercoaster activity in Investigation 4).

To what extent do the materials support Criterion 3A? Include your reasoning.
English and Spanish options are available for all materials for students; however, the technology included in the materials appears outdated, particularly the simulations students use to apply their understanding (e.g., rollercoaster activity).

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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
Provides enough materials for students to conduct investigations themselves. The teacher's manual (p. 62) includes suggestions for recycling materials.

To what extent do the materials support Criterion 3B? Include your reasoning.
There appears to be enough materials for students to investigate themselves; however, most are consumable and would need to be replace. However, there are suggestions for recylcling.

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
Includes a student textbook that includes passages using grade-level appropriate vocabulary. Textbooks include characcters that reflect the ethnic and racial diversity of the school district.

To what extent do the materials support Criterion 1A? Include your reasoning.
The provided textbook include Kindergarten appropriate vocabulary; however, there does not appear to be a range of texts genres. Although the website does provide a list of “recommended books” to accompany the unit. The provided texts do include diverse characters.

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Referenced, adapted and formatted from the following documents:

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Washoe County School District Needs Evaluation

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