Washoe County School District K-5 Science
2020 Instructional Materials Evaluation Rubric
(Community Members, Administrators and Parents Form)

Category 1: Designed for Three-Dimensional Learning

Criterion 1A: 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.

Specific Evidence from Materials
The anchor phenomenon is the Carnival is Coming to Town (Storyline) with the phenomenon being a swing ride that spins riders in a circle slow then fast. So – the idea is that all of the unit will relate back to the storyline and phenomenon of the swing to explore forces. This phenomenon is not a daily activity that can be experienced by all students. Many students have been to a carnival, but many student shave not. The use of phenomenon should be more universal to the experiences of all children regardless if they live in a city or in a rural environment. Many students in lower SCS have not been to a carnival or the carnival for that community does not include such rides… I think this phenomenon focuses on the middle class white dominant cultural experience. In lesson one – the phenomenon is throwing and catching a ball and the correlating thro a ball to knock down tins at the carnival. This is power point first then try it out in the lesson… (what do forces do?) In lesson two – arm wresting to look at opposing forces. The asks the students to reflect back on a carnival experience – bumper cars – and talk about how forces are used at the carnival – this requires an extreme amount of prior knowledge and does nothing for students who have not been to a carnival. (Balanced and unbalanced forces) Lesson three – the phenomenon is on the ship ride (rocks back and forth) at a carnival (patterns in motion) Again – this requires a serious amount of experience – even just watching the video does not really get to the point… Lesson four (Magnetic forces) – the phenomenon is a tractor liftin up huge bundles of steel rebar - nothing that a student could relate to ?

Lesson 5 (Electric Forces)) Static electricity and electroscopes.

I believe that there are a lot of opportunities for misconceptions in this mainly – online learning series. A teacher must have technology and beam most of the learning up on a camera for the students to learn. This is not what the NGSS meant by learning and doing science. However, many teachers may find the online aspect of this program interesting during home schooling times. Note – we are not adopting for that situation.

The Engineering Design Challenges are not really Engineering Design, but a series of tasks to build a fishing game for a carnival. This is a pretty weak engineering design challenge.

To what extent do the materials support Criterion 1A? Include your reasoning.
This curriculum is really online based and walks students through a series of "experiences" to understand the forces at work in a carnival. The phenomenon only works for those students who have experienced a carnival – but other connections are made to life experience or shown in a video clip.

Criterion 1B: 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.

Specific Evidence from Materials
The activity portion of this curriculum is pretty contrived. Most of the activities are video based and then once in a while there are materials that a teacher can put together to run a support activity or challenge. I get the point that the hands-on component of this activity is an add on – most can be done without even doing the activities – but just watching the videos. When students do get to do an activity, it is a task based activity – not an inquiry to solve a problem. The activities are not even structured inquiries, but rather a series of tasks to "discover" something that was already introduced within the unit structure… NOT ABC. This is more technology and computer driven and not very hands-on.

To what extent do the materials support Criterion 1B? Include your reasoning.

Criterion 1C: 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.

Specific Evidence from Materials
The materials in this kit are more of a support to the online aspect of the science unit. You explore a phenomenon via a video and then learn about the "science" through some interactive online learning (mostly power point) type situations and then get a chance to try it out. After that there are some connections to real life and a wrap up. Vocabulary is traditional and left up to the teacher to support. Many of the other supports are very basic and traditional (examples of working with diverse learners etc.) Weak connections to CCSS and takes liberty in the NGSS.

To what extent do the materials support Criterion 1C? Include your reasoning.

Category 2: Instructional Supports

Criterion 2A: 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 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

Specific Evidence from Materials

There is a common structure to this learning sequence – phenomenon, content, observation, investigation, connection to SEP, connection to everyday life, wrap up, connecting back to phenomenon, vocabulary, formative / summative assessment.

The assessment is not based upon the investigation, but the concept that is presented throughout – this assessment can be gained without even doing the activity and just using the online learning portions.

There are several "slides" for when a student would be asked a question or to write an answer to a question – these are really left up to the teacher in how they would use them – no real science notebook strategy is supported.

I think the assessments require a tremendous amount of background knowledge of the phenomenon of carnivals. Although some of the units use more everyday experiences – the performance tasks relate back to the story line that many children would not have experience with. The summative assessments require a lot of knowledge that I am not sure is gained from the units. And other assessments – mainly the engineering of a carnival fishing game do not connect all of the pieces of the unit together (no electricity is needed?

It seems that there are self-answers as well as teacher templates (fill in the blank) types of pieces. There is a lot of online stuff – and there are two structures (basic and expanded) – not sure why that is the case – but the expanded has way more supports. Does that cost more?

To what extent do the materials support Criterion 2A? Include your reasoning.
Materials are not a necessity in this curriculum. Being built on an electronic platform, the motivation for hands-on experiences is going to be low. See rationale above.

Criterion 2B: 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.

Specific Evidence from Materials
Students are NOT engaged with direct firsthand knowledge or experience in any o f these materials. Initial phenomenon exposure is via video and requires background experience in carnivals. Each of the lessons has a closer connection to the lived experiences of the majority of children, but the emphasis here is on learning via electronically through video, power points, online diagrams and fill in the blank modules. Only once in a lesson will there be an actual hands-on experience and that is not necessary as a video shows what the activity is etc. This is a real weakness in this curriculum. Vast amount of background knowledge is required to make sense of the phenomenon (Carnival). This targets a middle SES population with resources enough to attend a carnival. The questions and activities in the unit rely on this knowledge that many students may not have. The progression of learning is virtual in this curriculum – and the activity is only there to support the content that is introduced through more traditional means (video, ppt, demo videos etc.) Although there is an articulation between lessons 1-5 – there are few connections between the lessons and the final engineering challenge does not require the use of the content learned from each of the modules (making a carnival fishing game). However, all lessons tie back to the storyline.

To what extent do the materials support Criterion 2B? Include your reasoning.
I give this section a below average rating base on the comments above.

Criterion 2C: 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.

Specific Evidence from Materials

This curriculum is built so that a teacher can do the very few activities with an entire class (hands-on), however, most of the learning is through some sort of electronic venue – whether that be the numerous videos or animations that pre-teach content or the teacher demonstrations and tools that teach content first before a first hand inquiry is made by students. This program does seem to be able to be adapted to individual online learning – but I don't think there would be enough materials for the teacher to send home material for each student.

The lessons contain supports for Claims, evidence and reasoning - mostly in a template format where the students watch a video and then write – what did you see – what evidence did you see in order to make that claim etc. I believe that this requires a lot of personal background knowledge in order to actually make the connections. The hands-on activities seem ancillary to the online learning.

There are lots of supports for the activities – there is a video that teaches how to set up the investigation and vocabulary and descriptions are in the templates. There is no way for a student to do the activity wrong – thus leaving out problem solving and inquiry based skills development.

To what extent do the materials support Criterion 2C? Include your reasoning.
See above comments

Criterion 2D: 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 children at home.

Specific Evidence from Materials
The materials do provide lots of content background support in a traditional learning environment (videos, power point sessions, animations, and fill in the blank slides. The 5 activities allow students to practice the knowledge gained – not learning from an inquiry point of view. The lessons do have a sequence but can be done independently and the summative project (Fishing game) does not use all the content learned.

In each online module – there is a teacher box that has a lot of teacher supports (blending learning, lesson overview, materials, safety, learning progressions, differentiation, enhancing, and science background. Although it appears to have a lot of resources – most of these supports for teachers are only 2 paragraphs long. So – yes supports – but minimal.

I am not sure that I see a family or home connection in these materials? Perhaps in extending the lessons, but nothing explicit. This would all be up to the teacher to create.

To what extent do the materials support Criterion 2D? Include your reasoning.
See above

Category 3: Student Materials

Criterion 3A: 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.
- Materials have resources both in print and online.
- Multimedia supports are included such as videos, tutorials and simulations.
- Technology options are appropriate for both classroom and home use.

Specific Evidence from Materials
In each of the 5 modules, there is one activity per module: 1. What do forces do? No hands-on activity – just a video observation 2. Balanced and unbalanced forces – elevator box activity with spring scales 3. Patterns of Motion – a few short activities (bouncing a rubber ball, rolling a ball in a bowl, making a pendulum & slinky) – these are not inquiries, but more structured to make a point activities. The kits do not have enough for each student for all activities – these would be limited to groups of 4-5 students. 4. Magnetic forces - bar magnet picking up paperclips activity 5. Electrical forces – static and electroscopes. There are materials, but not enough for each student and in most cases not enough for a group of students. Materials are really lacking in these kits. Teachers would have to buy extra materials to make most of these activities work in a whole class / group learning experience.

I only see English – I am not sure how to toggle to different languages or if there are other language supports?

This entire thing is built upon graphic organizers – this is how I would teach using a power point with video and other tech supports – not how I would teach hands-on science.

All of the supports are online, but it appears that you can print if desired.

Tons of multimedia supports that replace the hands-on activities.

All of this is technology supported.

To what extent do the materials support Criterion 3A? Include your reasoning.
I really do not think this is the hands-on curriculum that WCSD is looking for – this is mostly an online presentation with a few activities inserted.

Criterion 3B: 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.

Specific Evidence from Materials
There are materials, but not enough for each student and in most cases not enough for a group of students. Materials are really lacking in these kits. Teachers would have to buy extra materials to make most of these activities work in a whole class / group learning experience. For example – rubber balls – I think there was a small bag of like 6. Enough for one ball per group, but how hard would it have been to include a few more so more kids can participate in the activity. There is only 1 slinky in the box? Very confusing if the students were to do that or if it were a teacher demonstration. The spring scales were good. Many of the materials were similar to what would be used in other kits – they would last ok. The main issue here is the number of materials – not enough for groups etc. Teachers would have to buy a lot of materials to make this work in a regular classroom.

Besides the spring scales – I do not see other measuring equipment. Most of the observations are not measurable and use more qualitative means – observe which goes farther – observe the pattern of motion of the ball etc. I don't believe that this is good inquiry based learning that requires measuring beyond observation.

To what extent do the materials support Criterion 3B? Include your reasoning.
See above

Criterion 3C: 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, 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.

Specific Evidence from Materials
There are not a lot of genre differences – more just a variety of videos, power point presentations, demonstrations / animations, and fill in questionnaires. This would be hard to teach to a class due to the presentation of online format. There are some student readers, but most of the lesson supports are within the electronic presentation format – kids would have to read from a projector? Maybe 1-1 technology is required for students to best use this? Not much diversity in the print materials - maybe 2/3 white and stereotyped pictures. More diversity online, but most of the student examples were young white children – there was a video of an Asian in a lab coat demonstrating how to do the activities… does that count? Not much reading comprehension support. Not unless it is in a different part of the online supports that I could not find.

To what extent do the materials support Criterion 1A? Include your reasoning.
See above.

Referenced, adapted and formatted from the following documents:

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Washoe County School District Needs Evaluation

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