Science Instructional Materials Review - Unit Evaluation Document

Program Name: _____

Reviewers Names: _____

CATEGORY 1: STANDARDS ALIGNMENT

Washington State adopted the Next Generation Science Standards in October 2013 as the Washington State Science Learning Standards. The NGSS Innovations are the five most significant ways the NGSS advance science teaching and learning, when compared to previous standards and typical instructional and curricular practice in American schools.

- Innovation 1: Making Sense of Phenomena and Designing Solutions to Problems (Category 1)
- Innovation 2: Three-Dimensional Learning (Category 1) and Assessment (Category 2)
- Innovation 3: Building K–12 Progressions (Category 1)
- Innovation 4: Alignment with English Language Arts and Mathematics (Category 1)
- Innovation 5: All Standards, All Students (Category 3)

4: Superior Evidence 3: Strong Evidence 2: Moderate Evidence 1: Minimal Evidence 0: No Evidence

	Aligned to Standards (representation in standards)	Scientifically Accurate	Grade-level Appropriate (matches grade band)	Average Score
1. The instructional materials present the SEPs (Science and Engineering Practices) in a way that is:				
2. The instructional materials present the DCIs (Disciplinary Core Ideas) in a way that is:				
3. The instructional materials present the CCCs (Crosscutting Concepts) in a way that is:				

Evidence:

4: Superior Evidence 3: Strong Evidence 2: Moderate Evidence 1: Minimal Evidence 0: No Evidence	
4. Individual learning activities include at least two of the three dimensions: Science and Engineering Practices (SEPs), Disciplinary Core Ideas (DCIs), and Crosscutting Concepts (CCCs).	
Evidence:	
5. The instructional program provides phenomenon-based science units that carry through the unit.	
Evidence:	
6. Phenomenon is relevant and meaningful to students, and offers an opportunity to explore historical and structural racism, and how power and privilege plays out (e.g. environmental social justice, like water issues in Flint, Michigan)	
Evidence:	
7. The instructional program engages students in the engineering design process by solving engineering problems that are appropriately sophisticated, relevant to local communities and cultures, and consider sustainability.	
Evidence:	
8. Units are organized as a storyline, anchored by a phenomenon or engineering problem that allows for students to build knowledge to explain the phenomenon or solve the engineering problem.	
Evidence:	

4: Superior Evidence 3: Strong Evidence 2: Moderate Evidence 1: Minimal Evidence 0: No Evidence	
9. Phenomena and/or engineering problems are presented to students as directly (first hand) as possible.	
Evidence:	
10. The instructional program provides opportunities for students to collect evidence using computer-based simulations, hands-on investigations, informational texts, and other media.	
Evidence:	
11. Instructional materials draw upon students' prior knowledge and experiences related to the targeted learning of Science and Engineering Practices (SEPs), Disciplinary Core Ideas (DCIs), and Cross Cutting Concepts (CCCs).	
Evidence:	
12. Instructional materials provide students with opportunities to consider the ethical implications of science.	
Evidence:	
13. The instructional program makes grade-appropriate connection(s) to the Common Core State Standards in Math and English Language Arts.	
Evidence:	

Wholistic Feedback on Standards Alignment:

CATEGORY 2: ASSESSMENTS

Assessments, like standards-based instruction, need to interweave the disciplinary core ideas, science and engineering practices and cross-cutting concepts. "Effective assessment of three-dimensional science learning requires more than a one-to-one mapping between the NGSS performance expectations and assessment tasks. It is important to note that more than one assessment task may be required to adequately assess students' mastery of some three-dimensional targets, and any given assessment task may assess aspects of more than one performance expectation." (*NGSS Innovations and Instructional Materials*, 2017)

4: Superior Evidence	3: Strong Evidence	2: Moderate Evidence	1: Minimal Evidence	0: No Evidence

1. Assessments engage students in at least two of the three dimensions of teaching and learning: the Science and Engineering Practices (SEPs), Disciplinary Core Ideas (DCIs), and Crosscutting Concepts (CCCs).	
Evidence:	
2. Assessment and/or specific assessment items are explicitly aligned or connected to the standards.	
Evidence:	
3. Assessments are accessible to all learners regardless of gender identification, language, learning exceptionality, cultural, or socioeconomic status.	
Evidence:	
4. Assessments have culturally relevant or responsive content (e.g. multiple cultural perspectives)	
Evidence:	

4: Superior Evidence 3: Strong Evidence 2: Moderate Evidence 1: Minimal Evidence 0: No Evidence	
5. Assessments are designed to yield information teachers may use in planning and modifying instruction.	
Evidence:	
6. Assessment tools include multiple measures of student progress within a unit.	
Evidence:	
7. Pre-assessments for each unit are provided to elicit students' prior knowledge and preconceptions.	
Evidence:	
8. Formative assessments are embedded consistently within the unit of instruction and are designed to elicit understanding to provide evidence of students' progress toward mastering the three-dimensional learning.	
Evidence:	
9. Summative assessments, at the end of a chapter or a unit, require students to provide a complete scientific explanation for the unit phenomenon, supported by evidence.	
Evidence:	

4: Superior Evidence 3: Strong Evidence 2: Moderate Evidence 1: Minimal Evidence 0: No Evidence	
10. Summative assessments involve a variety of modalities, including, but not limited to: hands-on or simulation-based performance tasks, open-ended constructed response problems, and scoring of portfolios of student work collected over the course of instruction.	
Evidence:	
11. Tools are provided for scoring assessment items (e.g., sample student responses, rubrics, scoring guidelines).	
Evidence:	
12. Guidance is provided for interpreting the assessments (e.g., determining what high and low scores mean for students) that allow for interpretation of levels of student understanding.	
Evidence:	
13. Instructional materials provide opportunities and guidance for oral and/or written self-assessment and teacher feedback allowing students to monitor their own learning.	
Evidence:	
14. Instructional materials include opportunities to use digital technology to assess three-dimensional learning.	
Evidence:	

Wholistic Feedback on Assessments:

CATEGORY 3: INCLUSIVE EDUCATIONAL PRACTICES

Instructional materials designed for the NGSS provide opportunities for all learners, and guidance to teachers for supporting diverse student groups, including students from economically disadvantaged backgrounds, students with special needs (e.g., visually impaired students, hearing impaired students), English learners, students from diverse racial and ethnic backgrounds, students with alternative education needs, and talented and gifted students. They do so using a variety of approaches, but also ensure the features of NGSS design are intentionally leveraged to support diverse learners as they develop proficiency, agency, and identity in science. (*NGSS Innovations and Instructional Materials*, 2017)

4: Superior Evidence	3: Strong Evidence	2: Moderate Evidence	1: Minimal Evidence	0: No Evidence

1. Instructional materials leverage students' knowledge and experiences by eliciting and revisiting ideas throughout the unit.	
Evidence:	
2. Instructional materials are designed to leverage diverse racial, cultural, and socioeconomic backgrounds of students, including honoring the ways they come to know science.	
Evidence:	
3. Instructional materials include options for how to connect instruction to students' home, neighborhood, community, and/or culture, with a lens on social justice and on sustainability.	
Evidence:	
4. Instructional materials provide guidance to teachers on how to engage students in a variety of discourse strategies to support three-dimensional learning.	
Evidence:	

4: Superior Evidence 3: Strong Evidence 2: Moderate Evidence 1: Minimal Evidence 0: No Evidence	
5. Instructional materials provide an intentional balance of a wide variety of activities within a unit (e.g., simulations, hands-on activities, readings, discourse, kinesthetic activities, etc.) to support students' engagement in content.	
Evidence:	
6. Instructional materials emphasize the importance of science education to all members of society in a way that is culturally and socially authentic.	
Evidence:	
7. Instructional materials supply differentiated paths for learners. In particular, resources provide instructional guidance to support students at various skill levels in science.	
Evidence:	
8. Instructional materials provide opportunities for students express their understanding of the phenomena using multiple modalities, including, but not limited to, discussing, writing, and drawing.	
Evidence:	
9. Instructional materials provide appropriate accommodations and modifications to support active participation in the learning of science and engineering by all students.	
Evidence:	

4: Superior Evidence 3: Strong Evidence 2: Moderate Evidence 1: Minimal Evidence 0: No Evidence	
10. Instructional materials are made accessible to students by providing appropriate supports for different reading levels.	
Evidence:	
11. Instructional materials are available in multiple languages.	
Evidence:	
12. Instructional materials provide supplemental support for new language learners, struggling, or absentee students.	
Evidence:	
13. Instructional materials provide opportunities for students to explore science and engineering careers connected to their lives through relevance and authenticity.	
Evidence:	
14. Instructional materials integrate technology-based, value-added tools that address issues of equitable access and support the growth of digital literacy skills and engagement for all students.	
Evidence:	

4: Superior Evidence 3: Strong Evidence 2: Moderate Evidence 1: Minimal Evidence 0: No Evidence	
15. Instructional materials approach the content from multiple racial, cultural, and socioeconomic perspectives.	
Evidence:	
16. Instructional materials include contributions in the fields of science and technology done by US scientists and engineers of color as well as contributions of people from different global societies.	
Evidence:	
17. Instructional materials include how different global communities experience, and are impacted by, science and engineering.	
Evidence:	
18. Instructional materials include examples of science innovations that have exploited groups in history to prevent the perpetuation of present and future exploitation (e.g. Henrietta Lacks or western colonization)	
Evidence:	
19. Instructional materials emphasize the importance of using science and engineering to benefit all.	
Evidence:	

Wholistic Feedback on Inclusive Practices:

CATEGORY 4: EVALUATION OF BIAS CONTENT

"As schools work to increase success for all students, it is important to recognize the impact of bias in classrooms, instructional materials, and teaching strategies. Evaluating for bias requires us to learn about others and to respect and appreciate the differences and similarities."

– WA OSPI Equity & Civil Rights Task Force

For This Table Only:

4: Superior Evidence 3: Strong Evidence 2: Moderate Evidence 1: Minimal Positive Evidence
0: No Evidence -1: Negative Evidence (e.g. shows bias)

Instructions The column categories are umbrella terms meant to encompass all examples to consider while reviewing the instructional materials. For categories represented, evaluate the level of evidence for each of the numbered components.	Gender	Sexual Orientation	Race/Ethnicity	Culture	Physical Disability	Physical Characteristics	Age	Family Structure	Socioeconomic Status	Geographic Setting	Average Score
1. Reflect qualities such as collaboration, compassion, intelligence, imagination, and courage.											
2. Represented as central characters in narratives and illustrations.											
3. Shown in active decision-making and leadership roles.											
4. Shown performing similar work in related fields.											
5. Referred to by their names and roles, not their characteristics.											

Evidence:

4: Superior Evidence 3: Strong Evidence 2: Moderate Evidence 1: Minimal Evidence 0: No Evidence	
6. Materials include historical and current contributions to science and engineering by members of historically marginalized identities.	
Evidence:	
7. Groups are identified in gender-neutral language (example: 'firefighter' instead of 'fireman').	
Evidence:	
8. People of all genders are depicted in non-traditional as well as traditional roles in the family, at work, in leisure activities, and in attitude.	
Evidence:	
9. Persons with disabilities are shown working and playing as equals with those around them.	
Evidence:	
10. Where appropriate, instructional materials acknowledge when the dominant culture took credit for discoveries and work done by non-dominant cultures.	
Evidence:	

Wholistic Feedback on Bias Content:

CATEGORY 5: INSTRUCTIONAL PLANNING AND SUPPORT

"Educators must possess a repertoire of evidence-based instructional strategies in delivering the curriculum to develop talent, enhance learning, and provide students with the knowledge and skills to become independent, self-aware learners, and to give students the tools to contribute to a multicultural, diverse society. The curriculum, instructional strategies, and materials and resources must engage a variety of learners using culturally responsive practices." *–National Association for Gifted Children website*

4: Superior Evidence	3: Strong Evidence	2: Moderate Evidence	1: Minimal Evidence	0: No Evidence

1. Instructional materials provide storylines that show how units are intentionally sequenced	
Evidence:	
2. Instructional materials include features that help teachers understand how the Science and Engineering Practices (SEPs), Disciplinary Core Ideas (DCIs), and Crosscutting Concepts (CCCs) are integrated throughout the materials.	
Evidence:	
3. Instructional materials contain teacher guidance on the lesson level that explains how the targeted SEPs, DCIs, and CCCs work together to support students in making sense of phenomena or designing solutions to problems.	
Evidence:	
4. Instructional materials provide guidance to teachers on how to engage students in a variety of discourse strategies to support their three-dimensional learning.	
Evidence:	

4: Superior Evidence 3: Strong Evidence 2: Moderate Evidence 1: Minimal Evidence 0: No Evidence	
5. Instructional materials provide teachers with a wide variety of engaging, student-centered learning activities that help students make sense of phenomena and in designing solutions to related problems.	
Evidence:	
6. Instructional materials provide lesson objectives that specifically connect to standards.	
Evidence:	
7. Instructional materials contain teacher guidance, with annotations and suggestions, for how to successfully implement their units and daily lesson plans.	
Evidence:	
8. Instructional materials contain explanations of the instructional approaches of the program and identification of research-based and culturally responsive pedagogies.	
Evidence:	
9. Teacher support materials provide opportunity for students to develop greater racial and cultural competency as it relates to the content of the unit	
Evidence:	

4: Superior Evidence 3: Strong Evidence 2: Moderate Evidence 1: Minimal Evidence 0: No Evidence	
10. Teacher support materials provide background knowledge related to the scientific content in each lesson.	
Evidence:	
11. Teacher background knowledge materials provide a range of perspectives: global, local, racial and cultural.	
Evidence:	
12. Teacher support materials identify common student preconceptions and suggestions for how to provide feedback and engage students in meaning-making that addresses these preconceptions.	
Evidence:	
13. Teacher support materials provide guidance with opportunities for checking for understanding and adjusting lessons, if necessary, to ensure three-dimensional learning.	
Evidence:	
14. Instructional materials provide guidance in using English Language Arts and Math Common Core State Standards in lessons and units.	
Evidence:	

4: Superior Evidence 3: Strong Evidence 2: Moderate Evidence 1: Minimal Evidence 0: No Evidence	
15. Instructional materials include a comprehensive list of supplies needed, as well as a detailed list of preparation tasks, for each lesson.	
Evidence:	
16. Instructional materials embed clear science safety guidelines for teachers and students across all lessons that are consistent with science safety rules and regulations, when appropriate, lab safety sheets are provided, and digital safety concerns and guidelines are addressed.	
Evidence:	
17. Instructional materials contain suggested pacing.	
Evidence:	
18. Instructional materials contain strategies for informing students, parents, and caregivers about the science program and suggestions for how they can help support student progress and achievement.	
Evidence:	
19. Instructional materials encourage the meaningful use of technologies (such as video clips or computer simulations) to investigate phenomena that cannot be directly experienced in the classroom, as well as tools used to record, display, and analyze data.	
Evidence:	

4: Superior Evidence 3: Strong Evidence 2: Moderate Evidence 1: Minimal Evidence 0: No Evidence	
20. Instructional materials provide guidance to teachers on how the use of embedded technology and how science instruction may be improved by the effective use of technology and multimedia literacy skills.	
Evidence:	
21. Instructional materials include or reference digital technology that provides opportunities for teachers and/or students to collaborate with each other (e.g., websites, discussion groups, webinars, etc.).	
Evidence:	
Wholistic Feedback on Instructional Planning and Support:	