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TOOL

Science Quality Instructional Materials Tool:

Grades: K-5

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About EdReports.org

Our Vision: All students and teachers in the United States will have access to the highest-quality instructional materials that will help improve student learning outcomes.

Our Mission: EdReports.org, a nonpartisan, independent nonprofit of educators, for educators, will increase the capacity of teachers, administrators and leaders across the country to seek, develop and demand high-quality instructional materials. EdReports.org's extensive and transparent reviews of existing instructional materials, including user feedback and technical assistance to schools and districts, will ensure teachers are equipped with excellent materials nationwide.

Our Theory of Action: Credible information against quality criteria in a quickly changing marketplace helps educators make better purchasing decisions and improve student performance. Identifying excellence and improving demand for credible information will improve the supply of quality materials over time, leading to better student achievement outcomes.

Grades K-5 Tool Development

The science review tool was developed by expert educators from across the country with deep knowledge and expertise in implementing the Next Generation Science Standards (NGSS) and conducting materials reviews. This group of educators, the Anchor Educator Working Group, absorbed the findings from a national learning tour, examined existing tools and rubrics, collaborated to develop the review tool, and finalized the review tool with input from experts in the field, including teacher membership organizations, state departments of education, researchers, and leading policy voices.

The tool development began with a national learning tour in December 2018 through March of 2019 involving science education experts from around the country that were involved in the development and/or implementation of the NGSS, as well as those with expertise in review processes related to science instructional materials. That tour yielded feedback and recommendations to ensure the vision for A Framework for K-12 Science Education and NGSS were at the core of the tool and that the Gateway system reflected the innovations in the NGSS. The Gateway system is a sequential review process that includes three gateways that reflect the importance of alignment to the fundamental design elements of the standards and also considers other high-quality attributes of curriculum as recommended by educators. The instructional materials can either meet or partially meet expectations for Gateway 1: Designed for NGSS to be reviewed for Gateway 2: Coherence and Scope. In order to be reviewed for Gateway 3: Usability and Supports, the instructional materials must first meet the expectations for Alignment to NGSS, both Gateways 1 and 2.

For more information regarding the general approach at EdReports.org, including an overview of how the Gateway system works, please visit the following link. https://www.edreports.org/about/our-approach/index.html

Key terms:

Indicator	Specific item that reviewers look for in materials.
Criterion	Combination of all of the individual indicators for a single focus area.
Gateway	Organizing feature of the evaluation tool that combines criteria and prioritizes order for sequential review.

Gateway 1: Designed for NGSS

Within Gateway 1, there are two criteria. Criterion 1 includes indicators that assess the degree to which the materials are designed for three-dimensional learning and assessment. Criterion 2 includes indicators that assess the degree to which the materials are designed to incorporate phenomena and problems.

Rating Sheet 1.1: Three-Dimensional Learning

Criterion 1	Materials are designed for three-dimensional learning and assessment. Maximum Points: 16

Indicator	Points
1a. Materials are designed to integrate the Science and Engineering Practices (SEP), Disciplinary Core Ideas (DCI), and Crosscutting Concepts (CCC) into student learning.	
i. Materials consistently integrate the three dimensions in student learning opportunities.	0 2 4
ii. Materials consistently support meaningful student sensemaking with the three dimensions.	0 2 4
1b. Materials are designed to elicit direct, observable evidence for the three-dimensional learning in the instructional materials.	0 2 4
1c. Materials are designed to elicit direct, observable evidence of the three-dimensional learning in the instructional materials.	0 2 4

RATING SHEET 1.1 TALLY

Earned: _____ of 16 points

Meets expectations (14-16 points)

Partially meets expectations (8-12 points)

Does not meet expectations (<8 points)

Criterion 2	Materials leverage science phenomena and engineering problems in the context of driving learning and student performance. Maximum Points: 12

Indicator	Points
1d. Phenomena and/or problems are connected to grade-band Disciplinary Core Ideas.	0 1 2
1e. Phenomena and/or problems are presented to students as directly as possible.	0 1 2
1f. Phenomena and/or problems drive individual lessons or activities using key elements of all three dimensions.	0 1 2
1g. Materials are designed to include both phenomena and problems.	Not Scored
1h. Materials intentionally leverage students' prior knowledge and experiences related to phenomena or problems.	0 1 2
1i. Materials embed phenomena or problems across multiple lessons for students to use and build knowledge of all three dimensions.	0 2 4

RATING SHEET 1.2 TALLY

Earned: _____ of 12 points

Meets expectations (10-12 points)

Partially meets expectations (6-9 points)

Does not meet expectations (<6 points)

Overall Gateway 1 Rating: Designed for NGSS

Gateway 1	Materials are designed for three-dimensional learning and assessment and leverage science phenomena and engineering problems in the context of driving learning and student performance. Maximum Points: 28

Criterion	Rating Score
1.1 Three-Dimensional Learning: Materials are designed for three-dimensional learning and assessment.	Point Total from Rating Sheet:
1.2 Phenomena and Problems Drive Learning: Materials leverage science phenomena and engineering problems in the context of driving learning and student performance.	Point Total from Rating Sheet:

GATEWAY 1 FINAL SCORE

Earned: _____ of 28 points

Meets expectations (24-28 points)

Partially meets expectations (15-23 points)

Does not meet expectations (<15 points)

Gateway 2: Coherence and Scope

Within Gateway 2, there is one large criterion that includes facets of progressions and scope of the three dimensions in the grade-level and/or grade-band performance expectations that should be present within a series. Criterion 1 includes indicators that encompass opportunities for students to build and connect knowledge and use of three dimensions within and across the series, scientific accuracy, appropriate use of science ideas to ensure students are engaged in grade-level and/or grade-band appropriate work, presence of each of the three dimensions and the respective elements, and connections to nature of science and engineering.

Rating Sheet 2.1: Coherence and Full Scope of the Three Dimensions

Criterion 1	Materials are coherent in design, scientifically accurate, and support grade-level and grade-band endpoints of all three dimensions. Maximum Points: 34

Indicator	Points
2a. Materials are designed for students to build and connect their knowledge and use of the three dimensions across the series.	
i. Students understand how the materials connect the dimensions from unit to unit.	0 1 2
ii. Materials have an intentional sequence where student tasks increase in sophistication.	0 1 2
2b. Materials present Disciplinary Core Ideas (DCI), Science and Engineering Practices (SEP), and Crosscutting Concepts (CCC) in a way that is scientifically accurate.*	0 1 2
2c. Materials do not inappropriately include scientific content and ideas outside of the grade-level Disciplinary Core Ideas.*	0 1 2
2d. Materials incorporate all grade-level Disciplinary Core Ideas:	
i. Physical Sciences	0 1 2
ii. Life Sciences	0 1 2
iii. Earth and Space Sciences	0 1 2
iv. Engineering, Technology, and Applications of Science	0 1 2

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2e. Materials incorporate all grade-band Science and Engineering Practices.	
i. Materials incorporate grade-level appropriate SEPs within each grade.	0 2 4
ii. Materials incorporate all SEPs across the grade band.	0 2 4
2f. Materials incorporate all grade-band Crosscutting Concepts.	0 4 8
2g. Materials incorporate NGSS Connections to Nature of Science and Engineering	0 1 2

* NOTE: Indicators with an asterisk are non-negotiable; instructional materials being reviewed must score above zero points in each indicator, otherwise the materials automatically do not proceed to Gateway 3.

RATING SHEET 2.1 TALLY

Earned: _____ of 34 points

Meets expectations (30-34 points)

Partially meets expectations (17-29 points)

Does not meet expectations (<17 points)

Overall Gateway 2 Rating: Coherence and Scope

Gateway 2	Materials are coherent in design, scientifically accurate, and support grade-level and grade-band endpoints of all three dimensions. Maximum Points: 34

Criterion	Rating Score
2.1 Coherence and Full Scope of the Three Dimensions: Materials are coherent in design, scientifically accurate, and support grade-level and grade-band endpoints of all three dimensions.	Point Total from Rating Sheet:

* NOTE: Indicators 2b-2c are non-negotiable; instructional materials being reviewed must score above zero points in each indicator, otherwise the materials automatically do not proceed to Gateway 3.

GATEWAY 2 FINAL SCORE

Earned: _____ of 34 points

Meets expectations (30-34 points)

Partially meets expectations (17-29 points)

Does not meet expectations (<17 points)

Gateway 3: Usability and Supports

Within Gateway 3, there are five different criteria that collectively address the usability of and supports for the materials under review. Criterion 1 includes indicators that assess how the materials are designed to support teachers not only in using the materials, but also in understanding the expectations of the standards. Criterion 2 includes indicators that assess how the materials are designed to support all students in learning. Criterion 3 includes indicators that assess how the materials are designed to support teachers not only in using the materials, but also in understanding how the materials are designed. Criterion 4 includes indicators that assess how the materials are designed to assess students and support the interpretation of the assessment results. Criterion 5 includes indicators that assess how the materials are designed to include and support the use of digital technologies.

Rating Sheet 3.1: Design to Facilitate Teacher Learning

Criterion 1	Materials are designed to support teachers not only in using the materials, but also in understanding the expectations of the standards. Maximum Points: 12

Indicator	Points
3a. Materials include background information to help teachers support students in using the three dimensions to explain phenomena and solve problems (also see indicators 3b and 3l).	0 2 4
3b. Materials provide guidance that supports teachers in planning and providing effective learning experiences to engage students in figuring out phenomena and solving problems.	0 2 4
3c. Materials contain teacher guidance with sufficient and useful annotations and suggestions for how to enact the student materials and ancillary materials. Where applicable, materials include teacher guidance for the use of embedded technology to support and enhance student learning.	0 1 2
3d. Materials contain explanations of the instructional approaches of the program and identification of the research-based strategies.	0 1 2

RATING SHEET 3.1 TALLY

Earned: _____ of 12 points

Meets expectations (10-12 points)

Partially meets expectations (6-9 points)

Does not meet expectations (<6 points)

Criterion 2	Materials are designed to support all students in learning. Maximum Points: 16

Indicator	Points
3e. Materials are designed to leverage diverse cultural and social backgrounds of students.	0 1 2
3f. Materials provide appropriate support, accommodations, and/or modifications for numerous special populations that will support their regular and active participation in learning science and engineering.	0 2 4
3g. Materials provide multiple access points for students at varying ability levels and backgrounds to make sense of phenomena and design solutions to problems.	0 1 2
3h. Materials include opportunities for students to share their thinking and apply their understanding in a variety of ways.	0 1 2
3i. Materials include a balance of images or information about people, representing various demographic and physical characteristics.	0 1 2
3j. Materials provide opportunities for teachers to use a variety of grouping strategies.	0 1 2
3k. Materials are made accessible to students by providing appropriate supports for different reading levels.	0 1 2

RATING SHEET 3.2 TALLY

Earned: _____ of 16 points

Meets expectations (14-16 points)

Partially meets expectations (9-13 points)

Does not meet expectations (<9 points)

Criterion 3	Materials are designed to be usable and also to support teachers in using the materials and understanding how the materials are designed. Maximum Points: 19

Indicator	Points
3l. The teacher materials provide a rationale for how units across the series are intentionally sequenced to build coherence and student understanding.	0 1 2
3m. Materials document how each lesson and unit align to NGSS.	0 1
3n. Materials document how each lesson and unit align to English/Language Arts and Math Common Core State Standards, including the standards for mathematical practice.	
i. Materials incorporate grade-level appropriate SEPs within each grade.	0 1 2
ii. Materials document how each lesson and unit align to Math Common Core State Standards, including the standards for mathematical practice.	0 1 2
3o. Resources (whether in print or digital) are clear and free of errors.	0 1 2
3p. Materials include a comprehensive list of materials needed.	0 1 2
3q. Materials embed clear science safety guidelines for teacher and students across the instructional materials.	0 1 2
3r. Materials designated for each grade level are feasible for one school year.	0 2 4
3s. Materials contain strategies for informing students, parents, or caregivers about the science program and suggestions for how they can help support student progress and achievement.	0 1 2

RATING SHEET 3.3 TALLY

Earned: _____ of 19 points

Meets expectations (16-19 points)

Partially meets expectations (10-15 points)

Does not meet expectations (<10 points)

Criterion 4	Materials are designed to assess students and support the interpretation of the assessment results. Maximum Points: 12

Indicator	Points
3t. Assessments include a variety of modalities and measures.	0 1 2
3u. Assessments offer ways for individual student progress to be measured over time.	0 1 2
3v. Materials provide opportunities and guidance for oral and/or written peer and teacher feedback and self reflection, allowing students to monitor and move their own learning.	0 1 2
3w. Tools are provided for scoring assessment items (e.g., sample student responses, rubrics, scoring guidelines, and open-ended feedback).	0 1 2
3x. Guidance is provided for interpreting the range of student understanding (e.g., determining what high and low scores mean for students) for relevant Science and Engineering Practices, Crosscutting Concepts, and Disciplinary Core Ideas.	0 1 2
3y. Assessments are accessible to diverse learners regardless of gender identification, language, learning exceptionality, race/ethnicity, or socioeconomic status.	0 1 2

RATING SHEET 3.4 TALLY

Earned: _____ of 12 points

Meets expectations (10-12 points)

Partially meets expectations (6-9 points)

Does not meet expectations (<6 points)

Criterion 5	Materials are designed to include and support the use of digital technologies. This Criterion is not scored.

Indicator	Points
3z. Materials integrate digital technology and interactive tools (data collection tools, simulations, modeling), when appropriate, in ways that support student engagement in the three dimensions of science.	Not Scored
3aa. Digital materials are web based and compatible with multiple internet browsers. In addition, materials are "platform neutral," are compatible with multiple operating systems and allow the use of tablets and mobile devices.	Not Scored
3ab. Materials include opportunities to assess three-dimensional learning using digital technology.	Not Scored
3ac. Materials can be customized for individual learners, using adaptive or other technological innovations.	Not Scored
3ad. 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.).	Not Scored

NOT SCORED

Overall Gateway 3 Rating: Usability and Supports

Gateway 3	Materials are consistent with effective practices for use and design and include supports and guidance for teachers. Maximum Points: 59

Criterion	Rating Score
3.1 Design to Facilitate Teacher Learning: Materials are designed to support teachers not only in using the materials, but also in understanding the expectations of the standards.	Point Total from Rating Sheet:
3.2 Support for All Students: Materials are designed to support all students in learning.	Point Total from Rating Sheet:
3.3 Documentation of Design and Usability: Materials are designed to be usable and also to support teachers in using the materials and understanding how the materials are designed.	Point Total from Rating Sheet:
3.4 Assessment Design and Supports: Materials are designed to assess students and support the interpretation of the assessment results.	Point Total from Rating Sheet:
3.5 Technology Use: Materials are designed to include and support the use of digital technologies.	Point Total from Rating Sheet:

GATEWAY 3 FINAL SCORE

Earned: _____ of 59 points

Meets expectations (50-59 points)

Partially meets expectations (31-49 points)

Does not meet expectations (<31 points)