2024 Instructional Material Summer Review Institute

Review Team Appraisal of Title

Grades 6-8 Earth and Space Science

This appraisal form is provided for use by educators responsible for the selection of instructional materials for implementation with districts and charter schools across New Mexico to meet the need of their student populations.

NMPED Adoption Information

Text Title	OpenSciEd EARTH AND SPACE SCIENCE BUNDLE – Teacher Edition	Publisher	Kendall Hunt Publishing
SE ISBN		TE ISBN	9781792499692
SW ISBN	9781792499685	Grade Level/Content	Grades 6-8 Earth and Space Science

Core Instructional Material Designation *(Core Instructional Material is the comprehensive print or digital educational material, including basal material, which constitutes the necessary instructional components of a full academic course of study in those subjects for which the department has adopted content standards and benchmarks.)*

Recommended (90% and above)	☑	**Recommended with Reservations** (80-89%)	☐	**Not Recommended and Not Adopted** (below 80%)	☐

Total Score - *The final score for the materials is averaged between the team of reviewers.*

Average Score
92%

Cultural and Linguistic Relevance Recognition - *Materials are reviewed for relevant criteria pertaining to the support for teachers and students in the material regarding cultural relevance and the inclusion of a culturally responsive lens. Those materials receiving a score of 90% or above on the CLR portion of the review are recognized as culturally and linguistically relevant.*

CLR Recognized ☑

Average Score
95%

FOCUS AREA 6: CULTURAL AND LINGUISTIC PERSPECTIVES
Instructional materials represent a variety of cultural and linguistic perspectives.
Statements of appraisal and supporting evidence:

Cultural and linguistic perspectives are taken into account with these materials. In most units, different scientists or real-world citizens are interviewed to provide a new perspective. Every lesson includes pictures, graphics and charts that are free of bias. The materials include ways to attend to equity, UDL support and guides to help multilingual learners.

FOCUS AREA 7: INCLUSION OF CULTURALLY AND LINGUISTICALLY RESPONSIVE LENS
Instructional materials highlight diversity in culture and language through multiple perspectives.
Statements of appraisal and supporting evidence:

In every "Lesson Teacher Edition", there are suggestions to attend to equity. The units include various perspectives to a situation. Scientists and citizens from different countries, races and cultures are interviewed and their ideas are embedded into the lesson. Several units have teachers bring in data from their community for students to analyze. The final assessment of a few units have students solve a situation for their own school or community. The materials do not include anything about the history of New Mexico.

Science Standards Review - *Materials are reviewed for alignment with the state adopted content standards, benchmarks and performance standards. The science standards include the performance expectations (PEs), disciplinary core ideas (DCIs), science and engineering practices (SEPs), crosscutting concepts (CCCs), and connections (CONNs) of the Next Generation Science Standards (NGSS). They also include the six NM StemReady! science standards.*

Average Score
92%

OVERALL ALIGNMENT
Materials align with the science standards overall.
Statements of appraisal and supporting evidence:

The materials align with the science standards by addressing the performance expectations, disciplinary core ideas, science and engineering practices, and cross-cutting concepts embedded within the NM STEMReady! standards. Student learning drives all instruction as they develop their own sensemaking through discourse with their peers, modeling opportunities, and scientific investigations with relevant and engaging anchoring phenomena. The materials embed CCSS for mathematics and ELA throughout the lessons with close reading, claim and evidence writing and data analysis of primary sources. A variety of formative and summative assessment opportunities, which are three-dimensional in nature and align to the standards, are incorporated into every lesson within each unit.

EARTH'S PLACE IN THE UNIVERSE
Materials align to the earth and space science performance expectations (PEs) and related components (DCIs, SEPs, CCCs, CONNs, and NM Standards) for this focus area.
Statements of appraisal and supporting evidence:

The materials fully align with the standards for Earth's Place in the Universe. The materials include examinations of models of the solar system and patterns of motion of the sun, moon and stars in the sky. The materials analyze data and stories from multicultural civilizations and identify patterns and cause/effect relationships. Included are computer-simulated models which describe the formation of the solar system, manipulating variables.

EARTH'S SYSTEMS
Materials align to the earth and space science performance expectations (PEs) and related components (DCIs, SEPs, CCCs, CONNs, and NM Standards) for this focus area.
Statements of appraisal and supporting evidence:

The materials align with the earth and space science performance expectations and related components for Earth's systems. Modeling; collecting and analyzing data; discourse; scientist circles; and investigations are used consistently throughout the materials to build understanding of earth system standards and connect back to the anchoring phenomenon. The materials integrate maps, mathematical principles, videos, simulations, and images.

EARTH AND HUMAN ACTIVITY
Materials align to the earth and space science performance expectations (PEs) and related components (DCIs, SEPs, CCCs, CONNs, and NM Standards) for this focus area.
Statements of appraisal and supporting evidence:

The materials align with all required components. The materials provide opportunities to evaluate the freshwater availability in the local community and the impacts that the consumption of fossil fuels has on the availability of those resources. Data is gathered to show the link between human population growth, rising CO2 levels, and the risk of natural hazards.

ENGINEERING DESIGN
Materials align to the engineering design performance expectations (PEs) and related components (DCIs, SEPs, CCCs, CONNs, and NM Standards) for this focus area.
Statements of appraisal and supporting evidence:

These materials contain engineering designs and align with the NM STEMReady! Engineering PEs. They describe the process by choosing criteria and constraints for solving solutions, based on the anchoring phenomenon. Designs are tested to find optimal solution and redesigned after receiving feedback from stakeholders.

CCSS for ELA and Math in Grades 6-8 NGSS
Materials align to the ELA and math standards identified in grades 6-8 Earth and Space Science NGSS.
Statements of appraisal and supporting evidence:

The materials contain a scope and sequence infographic that lists each middle school standard and describes the flow and content of each unit. Lessons build on previous standards and future standards. One standard (MS-ESS3-3 NM) is not included. No specific format for citations are included in the materials. The ELA and math CCSS that are relevant to the lesson are listed in the teacher's edition of the materials.

Science Content Review- *Materials are reviewed against relevant criteria pertaining to the support for teachers and students in the specific content area reviewed.*

Average Score
93%

FOCUS AREA 1: PHENOMENA-/PROBLEM-BASED AND THREE-DIMENSIONAL APPROACH
Instructional materials are centered around high quality phenomena and/or problems and require a three dimensional approach to make sense of the phenomena or to solve the problems.

Each unit begins with a storyline and the storyline is based on real-world, relevant anchoring phenomena which are experienced in everyday life. The materials inspire student discussion of solutions to the problem that is presented and provide design and solution opportunities, with time to test solutions, evaluate their effectiveness, refine the solutions, and then present a final consensus.

FOCUS AREA 2: THREE-DIMENSIONAL ASSESSMENT
Assessments provide tools, guidance and support for teachers to collect, interpret and act on data about student progress toward the learning goals of the 3 dimensional standards.

The summative assessments are provided at the end of each unit and are intended to demonstrate understanding applied to a novel situation using the three dimensions. Additionally, guidance is provided on methods of doing frequent checks for understanding and using formative assessments. There are opportunities provided for self-assessment and peer-assessment. Guidance is given to collect, analyze and act on data.

FOCUS AREA 3: TEACHER SUPPORTS
Materials include opportunities for teachers to effectively plan and utilize materials.

Each "Lesson Teacher Edition" provides guidance and direction. Specific, detailed instructions are provided about how to use the materials effectively to aid understanding of phenomena as well as to guide problem-solving. Detailed instructions include suggested prompts, what to look for/listen for, how to attend to equity, UDL tools, and ways to support learners in developing science and engineering practices and crosscutting concepts are provided.

FOCUS AREA 4: STUDENT CENTERED INSTRUCTION
Materials are designed for each student's regular and active participation in science content.

The materials provide opportunities to interact, design, test, discuss, refine, or collaborate the majority of the time. Units begin with an anchoring phenomenon and a driving question board is revisited throughout the unit. Discourse is used in group discussions or scientist circles about the problem, designing solutions to real-world problems by using hands-on experiments or testing different methods of solving problems.

FOCUS AREA 5: EQUITY
Materials are designed for all learners.

Materials are provided in both English and Spanish. Each lesson contains guidance for teachers to assist in facilitating equity and to help with ELs. Extension and remedial activities are provided.

All Content Review - *Materials are reviewed against relevant criteria pertaining to the support for teachers and students in the material regarding the progression of the standards, lesson structure, pacing, assessment, individual learners and cultural relevance.*

Average Score
93%

FOCUS AREA 1 COHERENCE:
Instructional materials are coherent and consistent with the New Mexico Content Standards that all students should study in order to be college- and career-ready.
Statements of appraisal and supporting evidence:

At the beginning of each unit and each lesson, the standard is broken down for teachers and explained how the anchoring phenomenon connects to the standard and builds throughout the unit. The New Mexico content standards are coherent throughout the lesson, which include investigations, discourse and sensemaking to develop scientific knowledge.

FOCUS AREA 2 WELL-DESIGNED LESSONS:
Instructional materials take into account effective lesson structure and pacing.
Statements of appraisal and supporting evidence:

Each unit includes a unit overview. Each lesson in the materials contains supports to develop science and engineering practices with the crosscutting concepts on how to think like a good scientist. There is also a section on where we are going and where we are not going, to make sure there are clear and measurable objectives. The lessons build in complexity and build together using effective lesson structure and pacing in order to create sensemaking of the new scientific knowledge.

FOCUS AREA 3 RESOURCES FOR PLANNING:
Instructional materials provide teacher resources to support planning, learning, and understanding of the New Mexico Content Standards.
Statements of appraisal and supporting evidence:

In every lesson, the New Mexico content standards are broken down to demonstrate how the SEPs, DCIs and CCCs are incorporated into the lessons. The materials provide a timeline, what materials will be used, an overview of the phenomenon and the modeling that will take place. Suggested prompts and how to respond examples are provided throughout the lesson. Simulations, readings, investigations, engineering design challenges, engineering solution challenges and modeling are supports.

FOCUS AREA 4 ASSESSMENT:
Instructional materials offer teachers a variety of assessment resources and tools to collect ongoing data about student progress related to the standards.
Statements of appraisal and supporting evidence:

In the unit overview materials there is a section for assessment, which includes rubrics and guides for teachers. Included are specific checks for understanding and what to look for/listen for throughout the lesson. Lesson-by-lesson assessment opportunities break down assessments for every lesson that connect to the standard. The assessments in these materials are alternative in nature because they are performance-based and three-dimensional. Also included are self-assessment and peer-assessment opportunities.

FOCUS AREA 5 EXTENSIVE SUPPORT:
Instructional materials give all students extensive opportunities and support to explore key concepts.
Statements of appraisal and supporting evidence:

For every lesson, all materials are also available in Spanish. There are recommendations for support such as UDL tools, multilingual speaker support, and suggestions for remediating misconceptions of science and engineering practices or cross cutting concepts. Extensions are provided. A home connection section provides guidance for guardians to support, expand and clarify scientific understandings.

FOCUS AREA 6 CULTURAL AND LINGUISTIC PERSPECTIVES:
Instructional materials represent a variety of cultural and linguistic perspectives.
Statements of appraisal and supporting evidence:

Cultural and linguistic perspectives are taken into account with these materials. In most units, different scientists or real-world citizens are interviewed to provide a new perspective. Every lesson includes pictures, graphics and charts that are free of bias. The materials include ways to attend to equity, UDL support and guides to help multilingual learners.

FOCUS AREA 7 INCLUSION OF CULTURALLY AND LINGUISTICALLY RESPONSIVE LENS:
Instructional materials highlight diversity in culture and language through multiple perspectives.
Statements of appraisal and supporting evidence:

In every "Lesson Teacher Edition", there are suggestions to attend to equity. The units include various perspectives to a situation. Scientists and citizens from different countries, races and cultures are interviewed and their ideas are embedded into the lesson. Several units have teachers bring in data from their community for students to analyze. The final assessment of a few units have students solve a situation for their own school or community. The materials do not include anything about the history of New Mexico.

Reviewers' Professional Summary - *These materials are reviewed by Level II and Level III educators from across New Mexico. The reviewers have brought their knowledge, experience and expertise into the review of these materials. They offer here their individual summary of the material as a whole.*

Reviewer #: 37

Background and experience:

I hold an MA in Secondary Education and a BA in Elementary Education. I am a Level III teacher with an endorsement in science. I have taught 6th, 7th and 8th grade science at the middle school level for the past 21 years. During this time, I have taught inclusion for 15 years and accelerated science for 6 years in two different states.

Professional summary of material:

I recommend these materials for use in the state of New Mexico. The materials are easy to navigate and understand. There is an overall storyline given for every unit that details how students will discover, through sensemaking, the three dimensionality of the standards. Each unit starts with an engaging and relevant anchoring phenomenon and the development of a driving question board. Students then move through lessons that continually connect back to the anchoring phenomenon in which students modify their original models and answer questions from the driving question board. Discourse is an important part of these materials and supports are given for teachers to have all students engage in meaningful conversations with their peers to deepen their scientific understanding. The lessons are hands-on; students analyze data, complete investigations, create investigations and engage in all science and engineering practices. Supports are clearly given for teachers to guide students through their sensemaking and enable them to succeed on assessments that have rigor and are also phenomenon based. The materials give teachers support for multilingual learners and attend to equity. They also give guidance on how to develop scientific understanding using science and engineering practices and crosscutting concepts.

Reviewer #: 38

Background and experience:

I am a six year, Level II teacher, of both math and science at the middle school level. I have a bachelor's in biology, a bachelor's in philosophy, and a master's in education. I have taught general education as well as self-contained special education.

Professional summary of material:

OpenSciEd provides high-level materials designed for student-focused learning. It provides ample guidance for teachers on exactly what to expect in discussions with students, how to effectively use materials to engage the students, and a number of assessments that allow teachers to accurately gauge the understanding of students. Students use Driving Question Boards, Word Walls, Scientist Circles, and more to collaborate with each other and learn how to speak scientifically to peers. They design solutions to problems, learn how to use feedback from stakeholders to refine their solutions, and they then complete their designs. Teacher materials contain a wealth of resources to assist struggling learners, to help multilingual learners, and to anticipate student responses to discussions. While OpenSciEd is highly recommended, it can be difficult for new teachers or teachers unfamiliar with the materials to assimilate into without assistance.

Reviewer #: 39

Background and experience:

I hold a K-8 New Mexico Level III teaching license with endorsements in TESOL and reading. I have 17 years experience educating students in grades Pk-8th. I hold a master’s degree in education and hold National Board Certification in EMC: Literacy. I have taught in both Florida and New Mexico in both public and private schools as well as charter schools.

Professional summary of material:

I strongly recommend the adoption of the OpenSci Ed Earth and Space Science materials for New Mexico students. The materials align well to the NM STEMReady! standards and allow students to experience them in an engaging and hands-on manner. The investigative nature of the materials lead students to conclusions without handing them the solutions. Deep critical thinking skills are developed through the student-centered instructional model. Whether individually, with a partner or in whole group, students are taught to analyze their thinking and use scientific evidence to support their claim. The use of relatable phenomena which drives the storyline of each unit allows students to build their background knowledge on each topic in a scaffolded manner. The manuals provide a multitude of resources for teachers that allow them to individualize the units for their student population. Sample student responses, "attending to equity" sidebars, and "where we are going/where we are not going" explanations allow the material to be used by both novice and experienced teachers to its full extent. The incorporation of both ELA and math standards within the lessons creates a seamless connection between these content areas, allowing students to experience the real-world application of these skills. Overall, the robust collection of simulations, experiments, scientific discussions, and scaffolded analysis of non-fiction text provides students with a rigorous yet achievable means of learning about earth space science.