2024 Instructional Material Summer Review Institute

Review Team Appraisal of Title

Grades 9-12 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	New Mexico Science Dimensions Earth & Space Science Digital Student Resource Package 6-Year	Publisher	Houghton Mifflin Harcourt Publishing Company
SE ISBN	9780358932574	TE ISBN	9780358932635
SW ISBN		Grade Level/Content	Grades 9-12 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
80%

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
76%

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

The instructional materials provide a large collection of images, diagrams, illustrations, graphs and information that do not make generalizations or reinforce stereotypes. There are not many opportunities for students to make interdisciplinary connections through diverse cultural and linguistic backgrounds.

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:

The materials include tools and resources to relate the content area to diversity in culture and language by allowing the students to choose a project output. The tools are also flexible on the students' academic levels, culture and language. However, the instructional materials do not offer a meaningful engagement for critical reflection about their own lives including cultures of past and present in 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
79%

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

The materials align to the overall Earth and Space Science NGSS standards; however, they do not meet some NGSS standards and do not meet any of the NM specific standards. The materials are well organized with plenty of teacher supports, online resources and real-world activities. Math and ELA standards are incorporated throughout the lessons and units. The materials offer quality pacing guides and reference resources for quality instruction. Engineering Design is well utilized throughout the materials, drawing cohesiveness to this tangible topic.

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 generally align to the earth and space science performance expectations for Earth's Place in the Universe. The materials address the age of continental rocks, the theory of plate tectonics, and how the continents have looked on a geologic time scale along with the age of the sun. The materials align to support learning of scientific ideas about the way stars produce elements, using mathematical representations to predict the motion of orbiting objects, and using evidence from ancient earth and other sources to construct an account of Earth's early formation and history.

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 somewhat align to the earth and space science performance expectations for Earth's Systems. The materials identify the theory of plate tectonics as the unifying theory of plate interactions; connection of radioactive decay as the driving force behind mantle convection; and focus on the irreversibility of some of these changes. The materials lack specific mention of electromagnetic radiation's role in Earth's global climate and precision of data and refinement in some of the activities. While these missing concepts keep the materials from meeting the standards as a whole, the material does support students' understanding that one change to Earth's surface can create feedbacks that cause change to other Earth systems by learning about positive and negative feedback loops, distribution of solar energy, and identifying and recommending a solution to the movement of coastal sediment.

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:

In the focus area of Earth and Human activity, the instructional materials have supports for students to develop understanding, based on empirical evidence, to differentiate between cause and correlation and make claims about specific causes and effects. Using mathematics and computational thinking to create computational models or simulations of phenomenon is addressed in some activities. Irreversibility, when looking at change and rates of change, is discussed but not emphasized. The materials address some human impacts on earth systems. The instructional materials provide engagement items that support the concepts about developing possible solutions; however, they often do not promote students to take into account all of the possible constraints that are in the standards.

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:

The materials offer opportunities for students to apply their science and engineering skills such as developing models based on evidence using multimedia processes. The materials provide simulations and real-life global challenges, which are embedded with cost, safety and reliability evaluations and take into account social and cultural impacts.

CCSS for ELA and Math in Grades 9-12 NGSS **Materials align to the ELA and math standards identified in grades 9-12 Earth and Space Science NGSS.** *Statements of appraisal and supporting evidence:*
The materials include NGSS standards for math and ELA within the text. There are clear and specific examples for math connections. The text provides opportunities for students to use models within the math connections throughout the materials. The Language Arts Connections in the SE are slightly vague as to the direction the student should take but the TE is clear and specific to give directions and follow the standards appropriately.

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
86%

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.

The materials provide a list of standards that are included throughout, with references to which units and lessons contain particular standards and provide students opportunities to discuss concepts with their peers and build on their prior academic knowledge. However, while the materials provide examples of the content within the lesson, they do not rise to the standard of phenomenon-based learning that is meaningful to the student and carried throughout lessons and units.

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.

There are meaningful tasks and multiple assessment types and opportunities provided; however, they often do not focus on phenomena. The engineering practices sometimes are missing parts or pieces of the standards they are to address. The materials provide opportunities for students to obtain feedback from teachers and peers and provide for student self-reflection.

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

The materials provide a comprehensive list of supplies and teacher guidance to support instructional activities in a safe manner; support for differentiated instruction for students at different levels; and support for students' assessments, interpreting their outputs, monitoring their progress, and providing feedback to guide their learning and to modify instruction. The guidance to support students for the use of embedded and meaningful technology is limited.

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

The materials support student centered instruction with a lesson flow that is provided to teachers prior to each unit and to students by providing driving questions at the beginning of the unit that will be answered throughout. However, while students are asked to pull from prior academic knowledge, using their learned experience as prior knowledge is lacking.

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

The materials support equity for all learners. The teacher's edition provides ideas and supports for differentiated instruction for different types of learners throughout the lesson. Students and teachers are provided a variety of formative and summative assessment options like evidence notebooks, check your understanding questions, performance based assessments and standards tests.

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
78%

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:

Most of the instructional material is coherent with the standard it attempts to address, but some are missing related pieces from within the particular standard. Material that pertains to New Mexico specific content standards is not provided.

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

The layout of both the TE and SE are predictable, allowing both teachers and students to recognize the pattern within a Unit. The teacher edition has 3D unit planning pages at the beginning of each unit. Each lesson begins with an identification of the content standards included. The margins contain activities, suggestions for differentiation, and suggestions for student discourse or engagements. Students are tasked with regularly adding information to their evidence notebooks, are provided with highlighted vocabulary words that can be found in the glossary, and illustrations and figures within the text help with student comprehension. However, there are not language objectives within each lesson.

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:

The teacher edition provides suggestions for activities, differentiation, opportunities for student collaboration, labs, projects and options to fully meet standards that otherwise are not fully met. The materials also provide a unit pacing guide and a list of the activities available within a lesson or unit; however, there is no connection between the pacing guide and the contents of a lesson. While a lesson might be recommended for 3 class periods on the pacing guide, the list of activities within the lesson gives no indication how long a teacher might spend on any portion.

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:

The teacher edition materials provide answer keys, suggested answers, or rubrics to support the teacher in interpreting student performance and a variety of formative and summative assessment options are available. However, language objectives are lacking in some lessons. While some assignments and assessments are provided in an editable format for customization, not all can be modified either for different types of learners or for use via technology.

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

The materials offer alternative and differentiated instruction to support EL and CLD students with extra support from read aloud online resources. In addition, the hands-on and project-based activities offer opportunities for students that encourage and support their critical thinking, creative thinking, inquiry, and complex problem-solving skills. Furthermore, there are also opportunities to engage families and caregivers and to interact with the community. However, some of the materials cannot be customized to meet the needs of different student populations and some instructions are not consistent in the lessons. For example, the TE presents plotting the domain function in a graph, or calculating variables, but there are no discussions or examples in the SE.

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

The instructional materials provide a large collection of images, diagrams, illustrations, graphs and information that do not make generalizations or reinforce stereotypes. There are not many opportunities for students to make interdisciplinary connections through diverse cultural and linguistic backgrounds.

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:

The materials include tools and resources to relate the content area to diversity in culture and language by allowing the students to choose a project output. The tools are also flexible on the students' academic levels, culture and language. However, the instructional materials do not offer a meaningful engagement for critical reflection about their own lives including cultures of past and present in 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 #: 70

Background and experience:

I have been a high school science teacher for 5 years, teaching earth and space science, conceptual physics, biology, and AP biology. I have a BS in biology, earned my teaching license through an alternative licensure program as a second career, and am currently pursuing my MS in biology. I currently hold a Level 2 teaching license in NM and am working to advance to Level 3.

Professional summary of material:

The materials are organized in a consistent manner with many colorful, well-labeled images and figures. Some standards are covered well, but enough are lacking crucial pieces that it would be frustrating to teach exclusively from these materials. Some helpful teacher supports are included, such as pre-made rubrics, recommended answers, and suggestions for differentiation. However, not having a pacing guide that is specific to the materials within lessons and units could be challenging for a new teacher or a teacher who is new to the content. No lexile score is provided, and the text seems appropriate for high school readers, though some portions read as more appropriate for older high school students than younger.

Reviewer #: 71

Background and experience:

I have been a high school science teacher for 20 years. I have taught chemistry, physical science, physics, and earth science in the Philippines, Mississippi, and New Mexico. My bachelor's degree is in science education (chemistry); master's degrees in science education (chemistry), science teaching (STEM), and educational leadership. I am currently pursuing my EDD in curriculum and instruction with concentration in instructional design and technology. I hold a Level III-A Instructional Leader License and a Level III-B Administrative License in New Mexico.

Professional summary of material:

The materials cover most of the core content standards with varied illustrations, charts, graphs, tables, hands-on and project-based activities for the students to address problems and issues connected to the real-world with the use of technology. The materials offer differentiated instruction for students at different levels, and a strong student engagement and peer collaboration are evident. However, not all standards are clearly addressed, specifically the CRT, New Mexico specific standards, language objectives, and self-reflection.

Reviewer #: 72

Background and experience:

I have taught in New Mexico public schools for 23 years. My bachelor's degree is in biology with a minor in natural science. My master's degree is in special education. I hold a level 3 teaching license with endorsements in 7-12 science, K-12 special education and K-12 health. I've taught a wide variety of science courses ,which include life science, physical science, earth science, biology, chemistry, anatomy and physiology and health. I have experience teaching each grade level from 7th through 12th. I taught independently for 17 years and have served as a co-teacher in inclusion classes for the past 6 years.

Professional summary of material:

The instructional materials align with most of the New Mexico state standards with the exception of some standards having pieces that are not directly implemented in the student-facing materials. An overall course scope and sequence (with estimated time needed) is provided at the beginning of the teacher materials, but a breakdown of units by standards, lesson, and recommended time is not a convenience provided to the teacher. The illustrations, graphs, diagrams, tables, hands-on projects, and activities are all attractive and are not subject to any cultural, linguistic or learning biases. However, a three dimensional, phenomenon-focused approach is not always apparent. Suggestions for differentiation and meeting needs of diverse learners are present throughout the different lessons, but they are minimal and inconsistent in availability.

Reviewer #: 68

Background and experience:

I have been teaching for 20 years (17 in New Mexico) and am currently a Level III teacher in New Mexico. I hold a B.A. in biology and German studies and an M.Ed. in curriculum and instruction. I have taught all subjects in the sciences since teaching in New Mexico; I currently teach AP computer science principles, AP chemistry, and chemistry. I am endorsed in science, MCLL and TESOL and enjoy working with local and state organizations to help encourage computer science education in New Mexico. This is my second year reviewing HQIM for the state.

Professional summary of material:
Although the materials align to the standards required my NM, they do not meet enough of the requirements and standards to qualify for recommendation. Major topics such as plate tectonics and space sciences are developed throughout the activities, but not enough information is given to the differences between correlation and causation. Discussion about the life of stars and the impacts of humans on Earth as a system are in the materials, but there is no focus on measuring the precision and the accuracy of student data. Overall, the materials attempt to meet the requirements of the state of NM but they leave out important topics such as history of NM in these phenomena and standards.
Reviewer #: 67
Background and experience:
I am an ASCP certified medical technologist, have a MS in secondary education, and have been teaching in NM and TX for 18 years. I have taught all science subjects from MS to HS in rural schools in eastern NM. I am a Level III teacher and was on the adoption team for incorporating the NGSS for NM in 2015.
Professional summary of material:
The materials I have reviewed for HMH Science Dimensions Earth and Space Science are well laid out and provide alternative resources for both the teacher and student. The lessons are deep and engaging but lack New Mexico specific examples. The materials, as a whole, include multiple examples from diverse locations. The attention to online resources provides both student and teacher with alternative assignments, problem-solving lessons, and extended activities to enhance learning. The materials lack some basic information regarding some space and lithospheric composition, as well as sensitivity to Cultural and Linguistic Learners and other special needs groups, but overall this is well-rounded material.
Reviewer #: 69
Background and experience:
I am in my 13th year of teaching in New Mexico. I have a bachelor's degree in wildlife biology and history as well as a master's degrees in S Level III teacher. I have taught mostly middle school and high school. Content areas include physical science, biological sciences, biomedica history, gifted education and forensic sciences. I have taught the past two years at the 7-8 levels in gifted education, teaching all curriculum and Career Standards and National Gifted Standards, as well as introductory biomedical sciences at the middle school level.
Professional summary of material:
The HMH Earth and Space Science materials that I reviewed are very organized and meet the NGSS fairly well. The content is cohesive and provides many opportunities for students to engage in content that is applicable and relevant to their world. The materials contain math and ELA embedded throughout and the scientific and engineering practices allow students to gain real skills that they can apply to other scientific experiences. The materials contain Cultural Connections, differentiation opportunities, and extension activities in the SE and do not have evidence of stereotyping. They lack references to NM contributions, namely in space science.