2024 Instructional Material Summer Review Institute

Review Team Appraisal of Title

Grades 9-12 Chemistry

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	Chemistry in the Earth System	Publisher	BIOZONE Corporation
SE ISBN	9781927309711	TE ISBN	9781927309742
SW ISBN		Grade Level/Content	Grades 9-12 Chemistry

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
58%

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
25%

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

The materials partially align to the cultural and linguistic perspectives in New Mexico. There are instances in the book where "rubbish" is used rather than garbage, as well as the British spelling of other words. Pictures and diagrams are used to support learning; however, because the images are limited and do not include an appropriate representation of the human population, they do not support culture.

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 do not highlight diversity of culture. There are no ethnic lenses or interpretations, nor are there any references to New Mexico or the cultures here. However, they do engage students in thinking critically about the human impact on earth. There is a translation tool online and a limited number of activities that discuss different perspectives.

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
61%

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

Overall alignment is present, with intentioned focus on activity-based learning and how chemistry is used in our world. However, there are gaps in several key areas of study including radioactive decay, equilibrium, and reaction rates. The material is also lacking in the cross cutting concepts of structure.

STRUCTURES AND PROPERTIES OF MATTER
Materials align to the physical science performance expectations (PEs) and related components (DCIs, SEPs, CCCs, CONNs, and NM Standards) for this focus area.
Statements of appraisal and supporting evidence:

There are opportunities for students to explore chemical structure and function. However, activities centered around radioactive decay and connecting models to actual outcomes of atomic interactions are missing.

CHEMICAL REACTIONS
Materials align to the physical 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 many of the NGSS including chemical reactions, laboratory practices in chemistry and defining characteristics of elements in the periodic table. However, the engineering standards are often missing. In addition, some of the CCSS are not addressed in the materials.

ENERGY
Materials align to the physical 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 mostly align with the energy standards, but they do not fully align with the cross cutting concepts of system models. Students have opportunities to explore energy in a manner that is relevant and accessible to them in the form of thermal circulation as a driving force of energy in geological systems.

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 most of the PEs for earth and space science. However, the topics of geologic time scales and energy from the sun are not fully aligned.

HUMAN SUSTAINABILITY
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 most of the PEs for earth and space science. However, the topics of systems and system models as well as the contribution of New Mexico's scientists and engineers are not fully addressed.

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:

Students have opportunities to explore and design experiments within the materials. Activities that connect these explorations to engineering and design performance expectations are limited to hypothetical scenarios and cost/benefit analyses. Students do not have opportunities to fully engage in defining and delimiting engineering problems, asking questions and defining problems, nor the influence of science, engineering, and technology on our world.
CCSS for ELA and Math in Grades 9-12 NGSS **Materials align to the ELA and math standards identified in grades 9-12 Chemistry NGSS.** *Statements of appraisal and supporting evidence:*
The materials closely align with the CCSS math standards, allowing students to use mathematics in authentic ways. The materials are somewhat aligned with the ELA standards, but do not provide students many opportunities to work on writing.

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
67%

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 are scaffolded using the 5E method (Engage, Explore, Explain, Elaborate, and Evaluate). This method provides opportunities for students to learn about phenomena in an accessible manner while connecting real-life phenomena outside the classroom to their course of study. Each unit opens with a phenomenon, then lessons tied to that phenomenon, then a review of that phenomenon. Problem solving opportunities are limited.

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.

Students are assessed across all 3 dimensions. However, there are limited opportunities for assessment, and technology is not leveraged in assessments. Alternative assignments and assessment methods for students who struggle with writing proficiency are not found.

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

The teacher supports in this text are very limited. There are answer keys for assignments and assessments, and there is a list of supplies for labs, but that is the extent of what is included in the teacher edition. There is very little teacher guidance for assessments or for remediation, including a lack of suggestions for monitoring student progress, and meeting the needs of students above or below grade level expectations.

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

There is a logical flow in the design of lessons and some material is reviewed within the unit. There is no review between the units, nor is there a review of past learning. The sequence is explained in the teacher edition, but it is not published to the student-facing materials and the references to prior learning are limited in number.

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

The materials are designed to be engaging and accessible to the majority of learners. However, printed materials are provided only in English, and supports for struggling and/or advanced students are not provided in the printed resources. Optional extension activities and electronic engagement are limited. The teacher edition of the printed materials only contains guidance on how to use the text and the answer keys to the student edition.

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
38%

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:

The materials include labs and activities that are appropriate for high school students. However, some of the standards are not fully addressed. In particular, engineering standards and some CCSS are not taught or assessed. There are also no added supports to help struggling learners meet mastery.

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

The materials are outlined at the beginning of each chapter with a checklist of student objectives. A list of standards across all 3 dimensions and annotations is located at the beginning of the teacher edition. The materials are formatted in an accessible manner. However, pacing guides and suggested lesson plans are not included in the materials.

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:

Student objectives and standards are listed, but are in the form of questions and are not measurable objectives. In addition, sample pacing guides and/or suggested lesson plans are not provided. The teacher guidance on academic development and use of technology is limited.

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 only formative assessments in these materials are in the form of a review just before the cumulative assessment in the text. This format does not fully allow for ongoing data regarding student progress. Assessments included in the printed materials are limited to essay format and students who struggle with writing are not provided with alternative methods of demonstrating understanding.

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

There are limited opportunities for teachers to extend the materials to meet the needs of learners and families. The online translation tool didn't appear to function when tried. The guidance for meeting the needs of diverse learners is limited. There is no way for teachers to customize the materials, and there are no remediation or acceleration options included.

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

The materials partially align to the cultural and linguistic perspectives in New Mexico. There are instances in the book where "rubbish" is used rather than garbage, as well as the British spelling of other words. Pictures and diagrams are used to support learning; however, because the images are limited and do not include an appropriate representation of the human population, they do not support culture.

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 do not highlight diversity of culture. There are no ethnic lenses or interpretations, nor are there any references to New Mexico or the cultures here. However, they do engage students in thinking critically about the human impact on earth. There is a translation tool online and a limited number of activities that discuss different perspectives.

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 #: 85

Background and experience:

Reviewer 85 holds a level 3A and 3B licence and is a Nationally Board Certified teacher. She earned a bachelor's degree in Biomedical engineering and two master's degrees, one in secondary curriculum, and one in school administration. She also earned a doctorate in school improvement. She has been working in New Mexico for 24 years, in 6th through 12th grade mathematics and science. She has worked with her district in creating topic assessments and proficiency scales in math and science, and has a passion for providing students with the materials they need to be successful in learning.

Professional summary of material:

This material is very well thought out and supported for earth science, with chemistry as a secondary focus. It is meant to be a consumable, so students can take notes and focus their learning in one place. It does not have cross cutting concepts, nor Science and Engineering Practices. The teacher supports are very limited, and do not provide support for a new teacher in how to address student needs for remediation, reteaching, acceleration or other diverse academic needs. School districts who choose this educational material will have to supplement this material heavily for students who struggle and need more practice, as there are no extra practice or assessments included in the material. Without cross cutting concepts or engineering practices, and coupled with the lack of teacher resources for remediation and reteaching, this material is not recommended.

Reviewer #: 86

Background and experience:

This reviewer is a level 3 teacher with a master’s degree in curriculum and instruction and over 20 years of experience as an educator. Seventeen of those 17 years were teaching science at the secondary level as either a general education teacher or special education teacher. The reviewer also holds a TESOL endorsement and is bilingual (Spanish). Previous to this, the reviewer participated in district-level science curriculum adoption in 2 different districts in 2 different states.

Professional summary of material:

This material has a robust coverage of some areas of the content. However, there is limited support in engineering and limited opportunities for students to design their own investigation. Teachers are given very little guidance and support in meeting the needs of diverse learners. Districts that use this material should be prepared to supplement the engineering content and train teachers in supporting learner needs. Due to the lack of these resources, it is not recommended.

Reviewer #: 74

Background and experience:

Reviewer is a dedicated and innovative STEM educator with over 15 years of experience as a classroom teacher, a Master's in Educational Leadership, a Master's of Science Teaching, a Bachelor's of Science in Psychology, a Bachelor's of Science in Technical Communication and dual endorsements in science and mathematics. Having taught a wide variety of both math, science, and engineering courses, their expertise spans curriculum development, data-driven decision making, and mentorship.

Professional summary of material:

The materials are scaffolded using the 5E (Engage, Explore, Explain, Elaborate, and Evaluate) pedagogy. This universal learning design (UDL) allows for learners to easily access and engage with learning materials while incorporating a wide variety of strategies into the science classroom. However, the materials do not cover all of the state mandated NGSS, and while the 5E method is utilized well, there are little to no supports for struggling, advanced, English Learners, or Culturally and Linguistically Diverse Learners. Materials are annotated with standards and utilize a tab system to indicate the aligned standards, but they do not include suggested pacing guides. In addition, the objectives listed in the materials are not measurable. It is not recommended that these materials are used as an independent source for core instructional materials.