2024 Instructional Material Summer Review Institute

Review Team Appraisal of Title

Grades 9-12 Biology

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	The Living Earth (2nd Ed)	Publisher	BIOZONE Corporation
SE ISBN	9781988566283	TE ISBN	9781988566306
SW ISBN		Grade Level/Content	Grades 9-12 Biology

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
91%

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
65%

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 incorporate images of people from different backgrounds and ethnicities, fostering inclusivity and encouraging students to contribute their own perspectives during classroom discussions. The materials present a global demographic perspective of humankind through images sourced from different contexts. The materials integrate activities that prompt students to think and respond across multiple subjects, incorporating elements from mathematics, English language arts (ELA), and history.

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 encourage students to actively contribute their cultural perspectives to classroom discussions and group projects. Language supports for English learners (EL) are not provided. Students are prompted to explore diverse perspectives on phenomena and are encouraged to share their own experiences during classroom discourse. Regional references in the text are specific to California, grounding examples and discussions within this geographic context. The instructional materials include instances of cultural relevance and opportunities for students to contribute their perspectives; the culturally significant events highlighted pertain to California.

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
95%

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

The materials are integrated to guide students through their biology studies. Materials align with all DCIs and include CCCs. The SEPs and CCCs are explained, providing opportunities for students to understand the DCI and in turn align with the performance expectation. The sequence of the materials follows the NM science standards in a consecutive order to actively engage students in learning both biological and environmental sciences, promoting understanding of scientific concepts and their real-world applications. The materials feature activities including labs with material guides, modeling activities, authentic articles, and authentic case studies. Units contain a summing-up assignment to check the depth of students' knowledge. For example, students investigate how the skeletal and muscular systems interact to facilitate body movement. This investigation then broadens into an extensive model that elucidates how different systems within the human body react to exercise.

FROM MOLECULES TO ORGANISMS: STRUCTURES AND PROCESSES
Materials align to the life 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 NM life science performance expectations. The materials guide students through their biology studies. The sequence of the materials engages students in learning both biological and environmental sciences, promoting a comprehensive understanding of intricate scientific concepts and their real-world applications. The materials feature a wide variety of activities including labs with material guides, modeling activities, authentic articles, and authentic case studies. At the end of each unit of activities there is a summing-up assignment to check the depth of knowledge of the students. For example, students investigate how the skeletal and muscular systems interact to facilitate body movement. This investigation then broadens into an extensive model that elucidates how different systems within the human body react to exercise.

MATTER AND ENERGY IN ORGANISMS AND ECOSYSTEMS
Materials align to the life 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 activities described in the instructional materials focus on exploring various aspects of energy flow in ecosystems, chemical processes like photosynthesis and respiration, and environmental interactions. Activities integrate hands-on experiments, simulations, and models to deepen students' understanding of complex biological and environmental concepts. On pages 300-301, students create a model of protein folding using pipe cleaners. The materials encourage critical thinking, data analysis, and application of scientific knowledge to real-world issues like climate change and ecosystem sustainability.

INTERDEPENDENCE IN ECOSYSTEMS
Materials align to the life 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 activities described in the instructional materials align with and focus on various aspects of ecology, environmental science, and human impact on ecosystems. They integrate scientific inquiry, data analysis, and critical thinking to explore the complexities of ecological systems and human-environment interactions. For example, on pages 29-31, students use graphical analysis to explore how competition can constrain population growth. The material encourages students to consider real-world challenges and develop informed solutions to environmental issues.

INHERITANCE AND VARIATION OF TRAITS
Materials align to the life 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 and focus on aspects of genetics and cellular processes. Activities incorporated into instruction, integrate scientific inquiry, data analysis, and theoretical exploration to deepen students' understanding of genetics, cellular processes, and their applications in real-world contexts such as medicine and environmental science. For example, on page 264, the inheritance of the intolerance of lactose uses a pedigree chart to show that traits can skip generations, but still be passed on. On pages 321-326, students use various models to investigate how DNA replicates, ensuring the transmission of genetic information to the next generation of cells within an organism.

NATURAL SELECTION AND EVOLUTION
Materials align to the life 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 and included activities align with and aim to deepen students' understanding of biological concepts through hands-on investigations and analyses. Together, they provide an approach to understanding biological processes, from genetics and natural selection to geological impacts and evolutionary history. Each activity encourages students to engage with evidence, conduct experiments, and draw connections across different scientific disciplines. The materials include the CCCs of patterns and cause and effect, and for the SEPs the materials have the students construct explanations by analyzing and interpreting data. The DCIs of natural selection and adaptation are covered in the materials of these activities.

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 and included activities align with and focus on understanding environmental processes and their impacts. Together, they aim to deepen students' understanding of environmental science, emphasizing hands-on experimentation, data analysis, and the interconnectedness of natural processes and human impacts on the environment.

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 and offer a broad spectrum of topics related to human impact on ecosystems, cultural evolution, and environmental dynamics, which are all explored through hands-on learning experiences. The materials aim to deepen students' understanding of complex environmental issues, human impacts on ecosystems, and potential solutions to mitigate these impacts. The materials and included learning experiences integrate scientific inquiry with practical applications and critical thinking about global environmental challenges.

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 and activities align with and focus on understanding human impacts on ecosystems and proposing solutions to mitigate these impacts while encouraging students to engage critically with environmental issues, apply scientific principles to real-world problems, and develop solutions that balance ecological, cultural, and human considerations. For example, activity 83 on page 393, investigates potential solutions for restoring habitat areas for an endangered species. These solutions must consider environmental and cultural constraints, while also minimizing impacts on human populations. Activities emphasize interdisciplinary approaches combining science, engineering, and environmental stewardship.

CCSS for ELA and Math in Grades 9-12 NGSS
Materials align to the ELA and math standards identified in grades 9-12 Biology NGSS.
Statements of appraisal and supporting evidence:

The materials and encompassed activities engage in analysis and exploration across scientific disciplines. For instance, on page 74-75, the activity uses the evidence of Huffaker's experiments to formulate conclusions about data. These materials and activities are crafted to engage in scientific inquiry, data analysis, and critical thinking. This approach prepares to evaluate complex scientific concepts and contribute to informed decision-making across various fields of study. The Course Guide (CG) balances speaking, listening, reading, and writing strategies.

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
98%

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 integrate a structured approach to learning through a standards-aligned table at the outset, referencing page numbers, activities, and color-coded standards. The materials follow the 5E model (engage, explore, explain, elaborate, evaluate,) engaging students in exploring concepts progressively to foster deep connections with the material. Each lesson exemplifies this approach, facilitating discourse and understanding. Additionally, students actively participate in hands-on learning, such as creating miniature wastewater treatment plants. Through this activity, the materials encourage students to investigate biological processes and their role in operational efficiency, applying theoretical knowledge to practical scenarios.

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 material offers a 3D learning approach centered on DCIs, CCCs, and scientific practices while exploring phenomena. Each chapter begins and ends with an anchoring phenomenon, introducing students to key concepts at the start and prompting reflection on their learning at the end. Lessons are structured to build on these phenomena, promoting an in-depth exploration that enhances understanding and application of scientific principles. Activities are aligned with 3D learning targets, ensuring that throughout the course, students engage with scientific concepts through experimental design and execution, effectively demonstrating their comprehension.

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

The instructional materials prioritize student safety by clearly marking investigations with symbols and providing guidance for safe lab execution. Procedures ensure that labs and investigations are conducted safely throughout the materials. Each chapter begins with anchoring phenomenon, a guiding question, and 3D learning targets to which the activities are aligned. Electronic modeling activities are integrated, including an example requiring students use Excel to model antibiotic resistance. Step-by-step guidance and examples are provided to support students in these explorations, enhancing their understanding of complex scientific concepts. Answer keys are available throughout the materials, providing suggested answers to guided questions. This supports both large and small group learning settings, as well as individualized instruction, facilitating engagement and comprehension across diverse learning needs.

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

The materials emphasize creating meaningful connections between students and real-world phenomena through its activities. For example, one experiment guides students in modeling the carbon cycle by constructing miniature aquariums as ecosystems. Using plants and small snails, students simulate ecological processes in a hands-on manner. Anchoring phenomena in the materials are introduced and revisited. These phenomena serve as focal points to guide understanding, facilitate discussions centered around real-world contexts, and scaffold content from chapter to chapter.

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

The materials utilize the 5E pedagogy to scaffold learning, ensuring a structured approach that engages students at various levels of understanding. It begins with engage to capture interest, explore to encourage hands-on investigation, explain to clarify concepts, elaborate to deepen understanding, and evaluate to assess learning outcomes. Online resources complement these stages, supporting students in developing a comprehensive understanding through interactive and varied learning experiences tailored to different learning styles and needs.

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
73%

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 teacher's edition of the material features a table listing standards and their corresponding references within the text, supported by color-coded notations. Lessons incorporate activities aimed at actively engaging students in the learning process. The lessons are thoughtfully designed for the grade level, addressing content requirements. They present students with real-world problems that encourage them to apply scientific methods and techniques, fostering connections beyond the classroom environment. Anchoring phenomena are utilized to scaffold lessons within each chapter, facilitating a cohesive flow of topics. Chapters reference and build upon anchoring phenomena from previous chapters, enhancing continuity and connecting learning experiences.

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

The material employs the 5E model of learning, guiding students in completing scaffolded activities that foster understanding and connections with the material. Each chapter begins with clearly defined objectives that include embedded standards and benchmarks. Activities corresponding to these standards and objectives are listed alongside, ensuring alignment with educational requirements. Lessons are structured with uniform formatting, including bolded key terms and symbols to highlight important elements in the text. Standards and benchmarks are color-coded for clarity and reference.

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's edition of the material follows the NM Content Standards, and features a table at the beginning, detailing cross-referenced standards with page numbers and corresponding lessons. These features are correlated with the NM Content standards. The standards are color-coded and referenced in each chapter's content, ensuring alignment with educational requirements. The instructional materials in the teacher's edition mirror those in the student materials, but include guidelines on how to utilize the text and additional reference materials provided at the beginning of the book. Answer keys for activities are also included. Specific annotations or strategies for assisting struggling students are not mentioned. The materials incorporate learning activities, combining hands-on experiments with digital simulations to enhance comprehension of the content.

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 instructional materials employ the 5E model of learning, ensuring continuous assessment of students' understanding throughout the content. The materials include summative assessments at the end of the unit. Quizzes or formative assessments for ongoing evaluation and end-of-year assessments are not included. Answer keys are provided for all content, facilitating grading and review. Guidance tailored to help students based on their individual learning gaps is not provided. There are no translated versions of the text or activities available, nor are there supports designed for English learners (EL) or culturally and linguistically diverse (CLD) students. The lessons incorporate activities that involve students interacting to assess their understanding of phenomena.

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

Adaptations and modifications tailored for special education (SPED) or English learners (EL) are not found within the materials. Instructional activities designed for struggling students are not included in the text. Modifications aimed at supporting ELs are not identified. Strategies and resources to assist teachers in engaging families in the learning process are not provided. The 5E model allows for critical engagement with the content, but the absence of identified modifications for SPED and ELs limits accessibility and support for these student populations within the instructional materials.

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 incorporate images of people from different backgrounds and ethnicities, fostering inclusivity and encouraging students to contribute their own perspectives during classroom discussions. The materials present a global demographic perspective of humankind through images sourced from different contexts. The materials integrate activities that prompt students to think and respond across multiple subjects, incorporating elements from mathematics, English language arts (ELA), and history.
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 encourage students to actively contribute their cultural perspectives to classroom discussions and group projects. Language supports for English learners (EL) are not provided. Students are prompted to explore diverse perspectives on phenomena and are encouraged to share their own experiences during classroom discourse. Regional references in the text are specific to California, grounding examples and discussions within this geographic context. The instructional materials include instances of cultural relevance and opportunities for students to contribute their perspectives; the culturally significant events highlighted pertain to California.

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 #: 73

Background and experience:

The reviewer is a level 3 teacher with a Bachelor's of Science in Biology, and a Master's in Education Administration. The reviewer is a Composite Science 6-12 certified teacher with 25 years of experience teaching biology, forensics, environmental science, aquatics, and astronomy.

Professional summary of material:

The material is a well-designed set of instructional materials and activities that can enhance students' knowledge of science through engaging labs, research projects, and classroom discussions that connect to real-world applications. The online text is an important part to the material for students who are unable to attend school due to any unforeseen complication.

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 material utilizes the 5E model to foster a deep understanding of biology integrated with environmental science through hands-on activities and interdisciplinary connections. Each chapter begins and ends with an anchoring phenomenon, introducing concepts at the start and prompting reflection at the end. Lessons within each chapter are structured to enhance comprehension of these anchoring phenomena. In the teacher's edition, a comprehensive table outlines educational standards with color-coded references, facilitating navigation and alignment with NGSS. While the material emphasizes diverse perspectives and cultural relevance, it lacks explicit support for ELs and SPED students and regional phenomena beyond California.
Overall, student learning is scaffolded, ensuring all students can engage with the material based on their existing knowledge. This approach encourages active participation in class discussions and learning activities across the entire set of materials.

Reviewer #: 75

Background and experience:

Reviewer has worked in education since 2014. The reviewer is a highly qualified biology and environmental science teacher, with endorsements in math and TESOL. Reviewer's academic qualifications include a Master of Education in Secondary Education, a Bachelor of Science in Environmental Science with a biology track (2014), and an additional special education credential (2019).

Professional summary of material:

The instructional materials cover all grade-level standards using a three-dimensional approach. The Course Guide (CG) balances speaking, listening, reading, and writing strategies. Scaffolded lessons support mastery of Disciplinary Core Ideas (DCIs), Science and Engineering Practices (SEPs), Crosscutting Concepts (CCCs), and Performance Expectations (PEs). Multiple practice opportunities build skills over time. Investigations use common classroom supplies. Content is grade-appropriate, with suitable tasks and themes for high school students. Materials make meaningful connections between standards within lessons and units. DCIs are sequenced logically, with phenomena helping students link concepts. Students construct knowledge by connecting ideas within chapters, building skills over time. The final chapter provides additional science skill support. Activities engage students in discussing and documenting scientific phenomena and solutions. The modular lesson structure allows for differentiation. Various assessments measure progress toward the NGSS, including formative and summative options aligned with performance expectations. Scoring guides help interpret student performance. The Course Guide offers assessment adaptation strategies. Activities and experiments generally meet NGSS requirements, though explicit vocabulary support could be improved.